## Natural Sciences (NSCI)

### NSCI 111 - Concepts in Physics and Astronomy
- **Short Title:** Concept in Physics & Astronomy
- **Department:** Natural Sciences Division
- **Grade Mode:** Standard Letter
- **Course Type:** Lecture
- **Distribution Group:** Distribution Group III
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Lower-Level
- **Description:** This course is intended as an investigation of some of the major concepts in physics and astronomy that form the basis of our modern understanding of the universe. By focusing on scientific methodology and a few universal laws, the course will help students appreciate scientific discoveries and give them the conceptual understanding to form intelligent views of contemporary scientific issues. For non-science/engineering majors.

### NSCI 120 - Introduction Scientific Research Challenges
- **Short Title:** Intr Scientific Res Challenges
- **Department:** Natural Sciences Division
- **Grade Mode:** Standard Letter
- **Course Type:** Laboratory
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Lower-Level
- **Description:** Students in NSCI 120 will solve client-based problems that require the discovery or application of scientific knowledge, specifically in the fields of biology and chemistry. Students will work in interdisciplinary teams and be involved in shaping their project and implementing the scientific method to find solutions. This course is limited to first-year students only. Mutually Exclusive: Credit cannot be earned for NSCI 120 and BIOC 112.

### NSCI 199 - Independent Study
- **Short Title:** Independent Study
- **Department:** Natural Sciences Division
- **Grade Mode:** Standard Letter
- **Course Type:** Independent Study
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Lower-Level
- **Description:** Independent Study in an area of science with emphasis on scientific procedures and methods. Instructor Permission Required.

### NSCI 230 - Computation in Science and Engineering
- **Short Title:** Computation in Sci & Engi
- **Department:** Natural Sciences Division
- **Grade Mode:** Standard Letter
- **Course Type:** Lecture
- **Distribution Group:** Distribution Group III
- **Credit Hours:** 3
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Lower-Level
- **Description:** The course introduces basic techniques for problem solving and visualization using computational environments such as Mathematica and MATLAB. Class will consist of a mixture of traditional lectures held in classrooms and self-paced modules covering topics in science and engineering that will be completed in Symonds II. No previous experience is required or expected. Cross-list: COMP 110. Repeatable for Credit.
- **Course URL:** [www.owl.net.rice.edu/~comp110](http://www.owl.net.rice.edu/~comp110)

### NSCI 305 - New Venture Communication for Science and Engineering
- **Short Title:** New Venture Commun for SCI&ENG
- **Department:** Natural Sciences Division
- **Grade Mode:** Standard Letter
- **Course Type:** Lecture
- **Credit Hours:** 1
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Upper-Level
- **Description:** Teaches students in science or engineering the skills needed to discover, communicate, and promote products and services based on technological innovation or scientific research. Students learn to innovate a product or service with social or commercial application, write an early-stage business plan, and give a 10-minute financing presentation.

### NSCI 320 - Public Science Communication Seminar
- **Short Title:** Public Science Comm Seminar
- **Department:** Natural Sciences Division
- **Grade Mode:** Standard Letter
- **Course Type:** Seminar
- **Credit Hours:** 1
- **Restrictions:** Graduate level students may not enroll.
- **Course Level:** Undergraduate Upper-Level
- **Prerequisite(s):** BIOC 201 or CHEM 121 or CHEM 151 or PHYS 101 or PHYS 111 or PHYS 125
- **Description:** Scientists are increasingly expected to communicate with the public. In this course, students learn from people who regularly communicate about science with general audiences in order to gain an appreciation for the various types of public science communication, its importance to society, and techniques used in effective public science communication. Graduate/Undergraduate Equivalency: NSCI 520. Mutually Exclusive: Credit cannot be earned for NSCI 320 and NSCI 520. Repeatable for Credit.
NSCI 399 - MEDICAL PROFESSIONALISM AND OBSERVERSHIP  
**Short Title:** MEDICAL PROFESSIONALISM  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** NSCI 399 consists of lectures to enhance your knowledge of medical professionalism, a writing experience aimed at reflecting on your experiences in both the lectures and clinical settings, and an opportunity to shadow a physician and/or observe in the operating room, intensive care unit or other clinical unit at Houston Methodist hospital. Once enrolled, students will have the opportunity to review the experiences of past students to select a specialty that closely aligns with your goals and expectations. Please note, matching with physicians will not occur until students begin matriculating in NSCI 399. The physician selection process will be explained during class. The process and application deadlines can be found using the following link: https://goo.gl/HD7zsO. NOTE: Space is limited and registration for NSCI 009 DOES NOT GUARANTEE a seat in NSCI 399. Instructor Permission Required.  
**Course URL:** goo.gl/HD7zsO (http://goo.gl/HD7zsO)

NSCI 410 - MEDICAL LEADERSHIP RESEARCH  
**Short Title:** MEDICAL LEADERSHIP RESEARCH  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Research  
**Credit Hours:** 1-5  
**Restrictions:** Graduate level students may not enroll.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Students will help in ongoing research in the health profession program with Dr. Gia Merlo. Additionally, students may conduct independent medical leadership/professionalism research upon approval. Instructor Permission Required. Repeatable for Credit.

NSCI 501 - PROFESSIONAL MASTER'S SEMINAR  
**Short Title:** PROFESSIONAL MASTER'S SEMINAR  
**Department:** Natural Sciences Division  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A weekly seminar which serves to provide exposure to local industry leaders from the areas of oil and gas exploration, nanotechnology, and environmental management; introduce career management and business relations tools; further develop written and oral communication skills; provide a forum for students to present internship project results. Repeatable for Credit.

NSCI 502 - SPACE STUDIES SEMINAR  
**Short Title:** SPACE STUDIES SEMINAR  
**Department:** Natural Sciences Division  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** A weekly space seminar held by space industry leaders and organized by faculty providing exposure on "real-world" subjects, such as general, commercial and scientific aspects of space; mission planning and design; astrodynamics/orbital mechanics; spacecraft navigation; Payload definition; Space environment; propulsion and maneuvering; human factors; risk management; export control regulations and others.

NSCI 505 - ENVIRONMENTAL LAB  
**Short Title:** ENVIRONMENTAL LAB  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Laboratory module offered in conjunction with CAAM 353 that illustrates applications of numerical analysis in the solutions of common environmental science and engineering problems. Instructor Permission Required.

NSCI 506 - ENVIRONMENTAL CASE STUDIES  
**Short Title:** ENVIRONMENTAL CASE STUDIES  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Seminar bringing in outside speakers from the community to address environmental issues.

NSCI 510 - PROFESSIONAL MS INTERNSHIP  
**Short Title:** PROFESSIONAL MS INTERNSHIP  
**Department:** Natural Sciences Division  
**Grade Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Internship/Practicum  
**Credit Hours:** 12  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Supervised internship or project associated with pursued degree. Exclusively for students in the Professional Master's Program in Natural Sciences. Repeatable for Credit.
NSCI 511 - SCIENCE POLICY, AND ETHICS  
**Short Title:** SCIENCE POLICY, AND ETHICS  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment limited to students with a class of Graduate or Senior. Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** An introduction to the policy, ethics, politics, and legal issues that relate to science and technology - discovery and application. This course presents a framework for analyzing ethical issues in business and professional work. The course then explores the ways in which government policy and business practices can promote or inhibit advances in science and technology while influencing the ethical choices of the professionals involved. Case studies will be used. Instructor Permission Required.

NSCI 512 - PROFESSIONAL MASTER'S PROJECT  
**Short Title:** PROFESSIONAL MASTER'S PROJECT  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Independent Study  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Professional master students present the results of their internship or independent project. Recommended Prerequisite(s): NSCI 510.

NSCI 520 - PUBLIC SCIENCE COMMUNICATION SEMINAR  
**Short Title:** PUBLIC SCIENCE COMM SEMINAR  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Prerequisite(s):** BIOLC 201 or CHEM 121 or CHEM 151 or PHYS 101 or PHYS 111 or PHYS 125  
**Description:** Scientists are increasingly expected to communicate with the public. In this course, students learn from people who regularly communicate about science with general audiences in order to gain an appreciation for the various types of public science communication, its importance to society, and techniques used in effective public science communication. Graduate/Undergraduate Equivalency: NSCI 320. Mutually Exclusive: Credit cannot be earned for NSCI 520 and NSCI 320. Repeatable for Credit.

NSCI 521 - WRITING AND PUBLISHING SCIENCE  
**Short Title:** WRITING AND PUBLISHING SCIENCE  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 2  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** To prepare graduate students for writing and publishing independent research, this course examines the genre of the primary literature article; analyzes successful writing; explores ways of managing references and avoiding plagiarism; and addresses issues of authorship, submission, and peer review. Students will receive peer feedback on documents in preparation.

NSCI 530 - THE SHAPING OF HEALTH POLICY  
**Short Title:** THE SHAPING OF HEALTH POLICY  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Study of how health-care policy decisions are made and implemented, using an interdisciplinary approach involving government, law, ethics, economics, and history. Includes case discussions of major policy problems by faculty experts in these disciplines and guest speakers who are leading national figures in the shaping of public policy. Mutually Exclusive: Credit cannot be earned for NSCI 530 and POST 430/POST 530/SOSC 430.

NSCI 550 - APPLIED MATHEMATICS AND SCIENCE FOR TEACHERS  
**Short Title:** APPLIED MATH FOR TEACHERS  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Rice office of STEM Engagement faculty and staff lead a discovery based course focused on 8th grade mathematics and science with a focus on the combined content of mathematics, science, and literacy (ELA) in addition to pedagogy leadership. Instructor Permission Required.

NSCI 573 - TEACHING PHYSICS VIA INQUIRY I KINEMATICS  
**Short Title:** TEACHING PHYSICS VIA INQUIRY I  
**Department:** Natural Sciences Division  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** This is a professional development course to serve high school physics teachers. It will cover topics in kinematics and mechanics with student-centered inquiry based pedagogy. Teachers will develop laboratory and hands-on activates, learn about new developments in physics research, and share best practices. The course goal is to improve teachers' science content knowledge related to the Texas Essential Knowledge and to provide teachers with tools to engage their students in science. Instructor Permission Required.
NSCI 574 - TEACHING PHYSICS VIA INQUIRY II, ELECTRICITY AND MAGNETISM
Short Title: TEACHING PHYSICS - INQUIRY II
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This is a professional development course to serve high school physics teachers. It will cover topics in electromagnetism with student-centered inquiry based pedagogy. Teachers will develop laboratory and hands-on activities, learn about new developments in physics research, and share best practices. The course goal is to improve teachers’ science content knowledge related to the Texas Essential Knowledge and to provide teachers with tools to engage their students in science. Instructor Permission Required. Recommended Prerequisite(s): NSCI 573.

NSCI 580 - CONTEMPORARY TOPICS IN ELEMENTARY SCHOOL MATHEMATICS
Short Title: CONTEMP TOPICS IN ELEM MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending elementary school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 585 - CONTEMPORARY TOPICS IN MIDDLE SCHOOL MATHEMATICS
Short Title: CONTEMP TOPICS IN MDL SCH MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending middle school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 586 - CONTEMPORARY TOPICS IN K-12 SCIENCE AND MATHEMATICS
Short Title: CONT TOPICS IN K-12 SCI & MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Contemporary topics in grades K-12 science and mathematics instruction and covers both content and pedagogy. Multiple sections are offered. Each section focuses on a specific areas of instruction at specified grades. All sections include field studies, inquiry, curriculum development and implementation of instructional strategies in the classroom. Students may enroll in different sections for repeated credit. Instructor Permission Required. Repeatable for Credit.

NSCI 590 - CONTEMPORARY TOPICS IN SENIOR HIGH SCHOOL MATHEMATICS
Short Title: CONTEMP TOPICS HIGH SCHL MATH
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Mathematics topics related to and transcending high school mathematics. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education. Problem-solving and motivational strategies, assessment, differentiated instruction, and questioning techniques to meet the needs of all learners. Curriculum development using the RUSMP Learning Plan.

NSCI 592 - SEMINAR IN SCIENCE FOUNDATIONS
Short Title: SEMINAR IN SCIENCE FOUNDATIONS
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: SEMINAR IN SCIENCE FOUNDATIONS ***** Seminar with a team of university faculty and community-based scientists (in fields such as medicine, space, energy, and the environment) to increase understanding of scientific principles as they are applied in the scientific community of Houston and as they relate to secondary school science.
NSCI 595 - TOPICS IN CONTEMPORARY ALGEBRA FOR IN-SERVICE TEACHERS
Short Title: TOPICS IN CONTEMP ALGEBRA
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 1-6
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Emphasis on function concepts through multiple representations and problem solving. Algebraic thinking and symbolic reasoning, underlying mathematical processes, and connections between algebra and the other mathematical strands. Active, student-centered, inquiry-based learning experiences using manipulatives and the latest technologies in a collaborative setting. Contemporary readings related to mathematics education.

NSCI 610 - MANAGEMENT FOR SCIENCE AND ENGINEERING
Short Title: MGT FOR SCIENCE/ENGINEERING
Department: Natural Sciences Division
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course is for graduate and undergraduate students who want to understand the basics of management in new and/or small technology-based businesses and is particularly relevant to students who are interested in careers in technology or entrepreneurial ventures. NSCI 610/ENGI 610 is team taught to provide insight into how technology oriented firms manage people, projects, accounting, marketing, strategy, intellectual property, organizations and entrepreneurship. Student’s active participation is essential. Students who take this course are eligible for MGMT 625. Please contact Dr. Harry Wilkinson: hewilkinson@sbcglobal.net. Cross-list: ENGI 610.