ENVIRONMENTAL STUDIES (ENST)

ENST 100 - ENVIRONMENT, CULTURE AND SOCIETY
Short Title: ENVIRONMENT, CULTURE & SOCIETY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This introductory course in environmental studies helps students to better understand the complex interrelationship between human cultures and their social and physical environments. Lectures and assignments draw upon the methods and expertise of architecture, the humanities and the social sciences. This is a core course of Rice's Environmental Studies minor. Cross-list: ARCH 105.

ENST 101 - THE EARTH
Short Title: THE EARTH
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment limited to students with a class of Freshman, Junior, Sophomore or Senior. Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level

ENST 102 - HISTORY OF THE EARTH AND LIFE
Short Title: HISTORY OF THE EARTH & LIFE
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Study of earth's systems over the past 4.6 billion years. Topics include evolution of life, continents, ocean basins and climate. Cross-list: ESCI 102.

ENST 113 - ENVIRONMENTAL CRISIS SEMINAR
Short Title: ENVIRONMENTAL CRISIS SEMINAR
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level

ENST 114 - DISCOVERIES IN EARTH, ENVIRONMENTAL AND PLANETARY SCIENCES SEMINAR
Short Title: DISCOVERIES IN EEPS SEMINAR
Department: Environmental Studies
Grade Mode: Satisfactory/Unsatisfactory
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Overview of exciting discoveries and recent advances in the fields of Earth, environmental, and planetary sciences. Topics may vary. Cross-list: ESCI 114.

ENST 117 - FRESHMAN SEMINAR IN LOCAL ENVIRONMENTAL SCIENCE RESEARCH
Short Title: FRESHMAN ENVIRONMENTAL SEMINAR
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: A 7-week seminar course to introduce freshmen perspective environmental science researches to the excitement of research at Rice and in the broader Houston area, and to provide context with which to think about facts presented in textbooks. Small groups will meet weekly with a graduate student or postdoctoral researcher to explore a published research article by a local team of researchers, gaining background information about the subject and exposure to the research techniques. In the final session, the group will tour the lab that produced the feature article. Additional tours and activities TBA. All first year non-transfer students are eligible to enroll in ENST 117 regardless of AP credit. This course meets in the second half of the semester and features research in the Environmental Science Major. Distribution Credit for ENST 117 no longer eligible beginning Fall 2019.

ENST 201 - THE SCIENCE OF CLIMATE CHANGE
Short Title: SCIENCE OF CLIMATE CHANGE
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: This undergraduate course will introduce students to the fundamentals of natural and anthropogenic climate change. After briefly reviewing Earth's composition and its fluid envelopes, we will cover the basic physics of the climate system, providing tools to understand weather and climate phenomena (e.g. monsoons, El Niño), the greenhouse effect, and climate feedbacks. Building on this understanding, a succinct tour of geologic history will help us paint a more complete picture of Earth's climate variations and how they affected human evolution and history. With this context, we will be able to judge the anomalous character of recent climate change, establish its anthropogenic nature, and discuss solutions to the current climate crisis. Students from any major are encouraged to enroll and engage on important topic. Cross-list: ESCI 201.
ENST 202 - CULTURE, ENERGY, AND THE ENVIRONMENT: AN INTRODUCTION TO ENERGY HUMANITIES
Short Title: CULTURE ENERGY & ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Humanity faces extraordinary challenges in an era of climate change and energy transition. These challenges are not only technological but also questions of value, power, behavior, and understanding. This course draws upon new research across the arts, humanities and social sciences to help students better understand the cultural and social dimensions of our current patterns of energy use, their environmental impacts, and the possibility of new energy futures. Intended for both STEM majors and humanities and social science students. Cross-list: HUMA 202.

ENST 204 - ENVIRONMENTAL SUSTAINABILITY: THE DESIGN & PRACTICE OF COMMUNITY AGRICULTURE
Short Title: COMMUNITY GARDEN
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Credit Hour: 1
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: The course introduces the fundamentals of community garden design and practice. Responsibilities will center on developing and improving the Rice Community Garden. A strong emphasis will be on learning and applying ecological principles to the practice of community agriculture. Class has required meetings outside of regular class time. Distribution Credit for EBIO/ENST 204 no longer eligible beginning Fall 2019. Cross-list: EBIO 204. Repeatable for Credit.

ENST 238 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Laboratory, Lecture, Seminar, Internship/Practicum
Credit Hours: 1-4
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.

ENST 250 - UNDERSTANDING ENERGY: ENERGY LITERACY AND CIVICS
Short Title: UNDERSTANDING ENERGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Energy is a foundational driver of human development. Energy impacts our economy, politics, culture, and environment. In this course, students will learn the fundamentals of energy in the context of broader systems and will be asked to think critically about how and why we rely on particular energy resources. The course structure will be comprised of lectures and class discussions along with field trips to power plants, chemical plants, and/or refineries. This class is vital for students interested in the environment and/ or the energy industry. Formerly offered as HURC 302. Mutually exclusive with HURC 302; credit cannot be earned for both HURC 302 and ENST 250.
Course URL: understandingenergy.rice.edu

ENST 265 - SCIENCE FICTION AND THE ENVIRONMENT
Course URL: 
Short Title: SCI FI AND THE ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Examines the ways that science fiction has expressed and challenged ideas about nature, culture, society, and politics. Cross-list: ENGL 269.

ENST 281 - ENGINEERING SOLUTIONS FOR SUSTAINABLE COMMUNITIES
Short Title: ENGRG SUSTAINABLE COMMUNITIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Lower-Level
Description: Students will work in teams to develop sustainable solutions for energy or environmental problems affecting our Houston and Rice communities. Emphasis will be placed on the integration of engineering fundamentals with societal issues, environmental and safety considerations, sustainability and professional communications. Prerequisites: introductory engineering courses, or permission of instructor. Cross-list: CHBE 281.
ENST 302 - ENVIRONMENTAL ISSUES: RICE INTO THE FUTURE
Short Title: ENVIRON ISSUES: RICE IN FUTURE
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: CEVE 307, ESCI 307. Recommended Prerequisite(s): MATH 101 and PHYS 101 or PHYS 111.

ENST 307 - ENERGY AND THE ENVIRONMENT
Short Title: ENERGY AND THE ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course explores the physical principles of energy use and its impacts on Earth's environment and climate. Topics will include energy mechanics, climate change, and the environmental impacts and future prospects of various fossil fuel and alternative energy sources. Cross-list: CEVE 307, ESCI 307. Recommended Prerequisite(s): MATH 101 and PHYS 101 or PHYS 111.

ENST 313 - SUSTAINABLE DESIGN
Short Title: CASE STUDIES IN SUSTAIN DESIGN
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course will explore sustainable design from initial sustainable facility concepts and team organizations, to enlisting community support and process assessment. The course will develop into details about sustainable design, lessons learned, processes and outcomes. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day class by the individual instructor. Cross-list: ARCH 313. Graduate/Undergraduate Equivalency: ENST 613. Mutually Exclusive: Credit cannot be earned for ENST 313 and ENST 613.

ENST 315 - ENVIRONMENTAL HEALTH
Short Title: ENVIRONMENTAL HEALTH
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): (BIOS 201 or BIOC 201) and (BIOS 202 or EBIO 202)
Description: An overview of environmental health issues including discussion of epidemiologic methods, illnesses caused or exacerbated by environmental exposures, and the role of research in driving effective policies to protect and promote public health. The class includes numerous guest lectures by area experts (physicians, researchers, community activists, policymakers and others); a bus tour featuring disproportionately affected neighborhoods as well as cutting-edge "green" initiatives; original student research projects; and an opportunity to address the Houston City Council. The dynamic between research and action, i.e., "making a difference," is stressed. FORMERLY ENST 314.

ENST 316 - ENVIRONMENTAL FILM
Short Title: ENVIRONMENTAL FILM
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Explores the ways film represents the environment and environmental issues (food, water, energy, waste, environmental justice, sustainability), and both expresses and shapes environmental values. We will view and analyze a variety of genres, as well as reading supplementary material. Cross-list: SOCI 316.

ENST 321 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building an optimizing its use via "repositioning" or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufactures, contractors, developers, owners, and Rice campus facility managers Cross-list: ARCH 321. Graduate/Undergraduate Equivalency: ENST 621. Mutually Exclusive: Credit cannot be earned for ENST 321 and ENST 621.
ENST 322 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Course Level: Undergraduate Upper-Level
Description: This course will explore application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop "regenerative redesign" approaches based on investigation of other campuses' case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ARCH 322. Graduate/Undergraduate Equivalency: ENST 622. Mutually Exclusive: Credit cannot be earned for ENST 322 and ENST 622.

ENST 323 - CONSERVATION BIOLOGY
Short Title: CONSERVATION BIOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Prerequisite(s): BIOC 201 and EBIO 202
Description: The course is designed to give students a broad overview of conservation biology. Lecture and discussions will focus on conservation issues such as biodiversity, extinction, management, sustained yield, invasive species and preserve design. Cross-list: EBIO 323.

ENST 332 - THE SOCIAL LIFE OF CLEAN ENERGY
Short Title: SOCIAL LIFE OF CLEAN ENERGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course considers the phenomenon of renewable energy, using a social scientific approach to analyze the various forces and interests involved in the development of renewable energy projects (such as hydropower, solar and wind) in both the global North and South. No prerequisites required. Cross-list: ANTH 332.

ENST 334 - LITERATURE AND THE ENVIRONMENT
Short Title: LITERATURE & THE ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course asks the question: How does literature express or shape environmental values? In this class we will read American fiction and nonfiction exploring the relationship between human and nonhuman nature. Cross-list: ENGL 368.

ENST 340 - GLOBAL BIOGEOCHEMICAL CYCLES
Short Title: GLOBAL BIOGEOCHEMICAL CYCLES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture/Laboratory
Distribution Group: Distribution Group III
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course introduces students to the coupled nature of the biosphere, atmosphere and hydrosphere using as focal points elemental cycles such as those of carbon and nitrogen. This is a writing-intensive class, and will include 3 required Saturday field trips. Cross-list: EBI 340, ESCI 340.

ENST 350 - ENVIRONMENTAL INTERNSHIP
Short Title: ENVIRONMENTAL INTERNSHIP
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum
Credit Hours: 1-6
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: Provides enrollment credit for approved internships with environmental organizations or agencies. Students must seek approval prior to beginning the internship. Weekly progress reports and a final paper are required. Instructor Permission Required.

ENST 357 - ENVIRONMENTAL SOCIOLOGY
Short Title: ENVIRONMENTAL SOCIOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group II
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course focuses on the foundations of environmental sociology and takes a social and historical approach to examine how humans affect the environment and the environment affects humans. Topics include: agricultural sustainability, resource extraction and climate changes; environmental racism/sexism; globalization and development; population, and consumption, and environmental movements. Cross-list: SOCI 367.

ENST 368 - LITERATURE AND THE ENVIRONMENT
Short Title: LITERATURE & THE ENVIRONMENT
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Lecture
Distribution Group: Distribution Group I
Credit Hours: 3
Restrictions: Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.
Course Level: Undergraduate Upper-Level
Description: This course asks the question: How does literature express or shape environmental values? In this class we will read American fiction and nonfiction exploring the relationship between human and nonhuman nature. Cross-list: ENGL 368.
ENST 379 - LAB MODULE IN AQUATIC ECOLOGY WITH SCUBA  
**Short Title:** LAB MOD AQU ECOLOGY WITH SCUBA  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Laboratory  
**Credit Hour:** 1  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Students will learn some fundamentals of aquatic ecosystems and conduct lab exercises that involve SCUB-based fieldwork in a nationally recognized freshwater dive site. Course has required meetings outside of regular class time. Prerequisites: LPAP 194 or proof of Open Water Scuba certification from a professional organization (e.g., PADI, NAUI). A course fee ranging from $300 to $535 is associated with the class. Please send all enrollment requests to Mariah McClarty, mam22@rice.edu and include the following information: major, year, scuba certification level and issuing professional organization, and a brief statement about why you want to take the course. You will be notified of enrollment decisions by December 5th. Distribution Credit for ENST/EBIO 379 no longer eligible beginning Fall 2019. Department Permission Required. Cross-list: EBIO 379. Recommended Prerequisite(s): EBIO 213 and LPAP 194.

ENST 391 - SPECULATIVE FUTURES  
**Short Title:** SPECULATIVE FUTURES  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Drawing from "CIFi," "Speculative Fiction," and global anthropological case studies, this course analyzes a series of potential futures as earthly conditions continue to be altered by human activity. Students will develop speculative future models through assessing climate conditions, population displacement, ethics, ecological transformations and human practices and values. Cross-list: ANTH 391.

ENST 406 - INTRODUCTION TO ENVIRONMENTAL LAW  
**Short Title:** INTRO TO ENVIRONMENTAL LAW  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Introduction to Environmental Law is intended to introduce the student to the methods used by the United States and the international community to regulate and/or allocate air, water and land resources. A key focus of this course will be the emerging area of the law of sustainable development, including the implementation of full price costing, life cycle analysis, carbon cycle analysis, allocation of assimilative capacity and other similar issues. Cross-list: CEVE 406.

ENST 415 - THE ENVIRONMENTAL MOVEMENT  
**Short Title:** THE ENVIRONMENTAL MOVEMENT  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** Examines the environmental movement in the U.S. and globally. After a historical overview, we will use a social movement perspective to examine mobilization, organizations and tactics, ideologies and identities, as well as exploring aspects of contemporary environmentalism (e.g. green building and slow flood, wildlife management/biodiversity, sustainable development, environmental justice). Cross-list: SOCI 415.

ENST 425 - ORGANIC GEOCHEMISTRY  
**Short Title:** ORGANIC GEOCHEMISTRY  
**Department:** Environmental Studies  
**Grade Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Description:** This course covers the organic geochemistry of the natural environment. Topics include: production, transport, decomposition, and storage of organic matter in the marine and terrestrial environments, use of isotopes to track biogeochemical processes and natural and perturbed carbon cycle issues, including past and recent climate shifts. Cross-list: CHEM 425, ESCI 425.
ENST 437 - ENERGY ECONOMICS  
**Short Title:** ENERGY ECONOMICS  
**Department:** Environmental Studies  
**Course Mode:** Standard Letter  
**Course Type:** Lecture  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ECON 301 or ECON 370  
**Description:** Discussion of key aspects in the supply and demand of energy. Topics include optimal extraction of depletable resources, transportation, storage, end-use and efficiency, and the relationship between economic activity, energy, and the environment. Cross-list: ECON 437.

ENST 445 - SEMINAR IN URBAN SUSTAINABILITY AND LIVABILITY RESEARCH METHODS AND APPLICATIONS  
**Short Title:** URBAN SUSTAINABILITY SEMINAR  
**Department:** Environmental Studies  
**Course Mode:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** POLI 395  
**Description:** Seminar in the practice and techniques for student-led engaged research in urban sustainability and livability. Techniques and methods applied in actual urban settings, including an understanding of intentional design, the use of psycho-geographic mapping, human geography, and derives to understand urban communities. Content includes multifaceted exploration of sustainability. Instructor Permission Required. Repeatable for Credit.

ENST 446 - LAB IN ENGAGED URBAN SUSTAINABILITY AND LIVABILITY RESEARCH  
**Short Title:** ENGAGED URBAN RESEARCH LAB  
**Department:** Environmental Studies  
**Course Mode:** Standard Letter  
**Course Type:** Lecture/Laboratory  
**Credit Hours:** 3-4  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ENST 445  
**Description:** Lab in the practice and techniques for student-led engaged research in urban sustainability and livability. Techniques and methods applied in actual urban settings, including an understanding of intentional design, the use of psycho-geographic mapping, human geography, and derives to understand urban communities. Content includes multi-faceted exploration of sustainability. Instructor Permission Required. Repeatable for Credit.

ENST 441 - GOVERNING THE ENVIRONMENTAL COMMONS  
**Short Title:** GOVERNING ENVIRONMNTL COMMONS  
**Department:** Environmental Studies  
**Course Mode:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ECON 301 or ECON 370  
**Description:** Discussion of key aspects in the supply and demand of energy. Topics include optimal extraction of depletable resources, transportation, storage, end-use and efficiency, and the relationship between economic activity, energy, and the environment. Cross-list: ECON 437.

ENST 447 - SPECIAL TOPICS  
**Short Title:** SPECIAL TOPICS  
**Department:** Environmental Studies  
**Course Mode:** Seminar  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** POLI 395  
**Description:** Seminar in the practice and techniques for student-led engaged research in urban sustainability and livability. Techniques and methods applied in actual urban settings, including an understanding of intentional design, the use of psycho-geographic mapping, human geography, and derives to understand urban communities. Content includes multifaceted exploration of sustainability. Instructor Permission Required. Repeatable for Credit.

ENST 480 - ENVIRONMENTAL AND ENERGY ECONOMICS  
**Short Title:** ENVIRONMENTAL ECONOMICS  
**Department:** Environmental Studies  
**Course Mode:** Standard Letter  
**Credit Hours:** 3  
**Restrictions:** Enrollment is limited to Undergraduate, Undergraduate Professional or Visiting Undergraduate level students.  
**Course Level:** Undergraduate Upper-Level  
**Prerequisite(s):** ECON 200 or ECON 301 or ECON 370  
**Description:** Uses economic theories of externalities and common property resources to analyze how markets, legal institutions, regulations, taxes and subsidies, and voluntary activity can affect the supply of environmental amenities, such as clean air, clean water, and wilderness areas. Also discusses methods for determining the demand for environmental amenities. Cross-list: ECON 480.

ENST 513 - SEMINAR: TOPICS RELATED TO THE EARTH'S DEEP INTERIOR  
**Short Title:** SEM: EARTH'S DEEP INTERIOR  
**Department:** Environmental Studies  
**Course Mode:** Satisfactory/Unsatisfactory  
**Course Type:** Seminar  
**Credit Hours:** 1-3  
**Restrictions:** Enrollment is limited to Graduate level students.  
**Course Level:** Graduate  
**Description:** Seminar topics may vary. Readings and discussions about current topics related to the processes governing the Earth's deep interior. General themes include mantle convection, thermal evolution, and volatiles. Repeatable for Credit.
ENST 613 - CASE STUDIES IN SUSTAINABLE DESIGN
Short Title: SUSTAINABLE DESIGN
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Cross-list: ARCH 613. Graduate/Undergraduate Equivalency: ENST 313. Mutually Exclusive: Credit cannot be earned for ENST 613 and ENST 313.

ENST 621 - CASE STUDIES IN SUSTAINABILITY: THE HIGH PERFORMANCE BUILDING
Short Title: SUSTAINABILITY CASE STUDIES
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: The project-based seminar will provide a means by which all those with an interest in the building science entailed in the design of commercial, institutional, and residential structures can investigate common issues, obtain information, discuss local strategies, and otherwise address subjects relating to building or campus performance over its lifecycle. To develop an approach of taking an existing Rice University building and optimizing its use via "repositioning" or redesign the class will create an interdisciplinary forum where students of architecture, engineering (structural, mechanical, etc.), and human sciences will potentially collaborate with professional building consultants, materials manufacturers, contractors, developers, owners, and Rice campus facility managers. Cross-list: ARCH 621. Graduate/Undergraduate Equivalency: ENST 321. Mutually Exclusive: Credit cannot be earned for ENST 621 and ENST 321.

ENST 622 - CASE STUDIES IN SUSTAINABILITY: THE REGENERATIVE REPOSITIONING OF NEW OR EXISTING RICE CAMPUS BLDGS
Short Title: CASE STUDIES IN SUSTAINABILITY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: This course will explore the application of high performance, sustainable design to specific Rice University campus and facility targets. In partnership with Rice University leadership, the team effort will develop "regenerative redesign" approaches based on investigation of other campuses' case study. Space is limited and registration does not guarantee a space in this course. The final course roster is formulated on the first day of class by the individual instructor. Cross-list: ARCH 622. Graduate/Undergraduate Equivalency: ENST 322. Mutually Exclusive: Credit cannot be earned for ENST 622 and ENST 322.

ENST 646 - ADVANCED TOPICS IN BIOMEDICAL ANTHROPOLOGY
Short Title: ADV BIOMEDICAL ANTHROPOLOGY
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Seminar
Credit Hours: 3
Restrictions: Enrollment is limited to Graduate level students.
Course Level: Graduate
Description: Seminar on contemporary research on the biomedical aspects of human health and disease. Includes topics from medical ecology and epidemiology. Cross-list: ANTH 646. Recommended Prerequisite(s): ANTH 381 or ANTH 581.

ENST 677 - SPECIAL TOPICS
Short Title: SPECIAL TOPICS
Department: Environmental Studies
Grade Mode: Standard Letter
Course Type: Internship/Practicum, Lecture, Laboratory, Seminar
Credit Hours: 1-4
Restrictions: Enrollment is limited to Graduate or Visiting Graduate level students.
Course Level: Graduate
Description: Topics and credit hours vary each semester. Contact department for current semester's topic(s). Repeatable for Credit.