Environmental Areas of Concentration

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**Courses**

**ESS 101**
**Introduction to Environmental Issues**
This course introduces students to the interdisciplinary nature of environmental concentrations. Students are familiarized with the present quality of the environment from a natural science perspective. The causes of environmental problems are discussed and analyzed. Students are exposed to the political and socioeconomic aspects of environmental problems. Throughout the course, an integrated approach to addressing and solving environmental problems is emphasized. Satisfies general studies interdisciplinary requirement.

**ESS 205**
**Introduction to Physical Geology**
This course introduces students to the composition, structure and internal processes of earth: classification and distribution of materials at the earth's surface; and provides opportunities to interpret geologic data. General studies lab science credit or physical science elective for environmental concentrators.

**ESS 260**
**Environmental Science of Latin America and the Caribbean**
This course addresses environmental topics as they pertain to Latin America and the Caribbean Islands. Topics include deforestation, agriculture, conservation of biodiversity, wetland loss, coral reef degradation, ecotourism and others. Emphasis is placed on merging Latin American and Caribbean culture with environmental management and policy. Prerequisite: EVS 101 or permission of instructor

**ESS 280**
**Martinique Studies**
This interim course introduces students to the people and lands of the French-speaking, Caribbean island of Martinique through an intensive and structured visit to the island. After reading and assessing a series of preparatory articles in early January the class will fly to Martinique where they will be guided by accompanying faculty to a series of activities that will enlighten them to many aspects of Martinique life. These undertakings include lectures at the university, field trips to various parts of the island and a variety of
directed events, which will encourage them to participate in many facets of Martinique culture.

**ESS 298**  
**Ecological and Anthropological Field Study in Peru**  
The course introduces students to the basics of field studies within the anthropological and ecological disciplines. The study culminates in student projects focused on a communal reserve in the Amazon region in Peru. Specific topics include techniques in biological surveys with emphasis on cataloging species diversity, habitat assessment, quantifying human influence, and evaluating efficacy of wildlife management techniques. Anthropological/sociological methods include survey and demographic data collection, interviewing, direct observation and participant observation followed by methods of assessment including both qualitative and quantitative analysis. Students will be required to propose and conduct group projects during a field component in Peru. No prerequisite.

**ESS 310**  
**Pollution: Environmental Effects and Remediation**  
Sources of environmental pollution have changed substantially over the last several decades as has the technology used to remedy damaged ecosystems. This course addresses the sources of a variety of pollutants and their fate in the natural environment. Ecological effects of different forms of pollution are discussed across a number of environments (atmosphere, surface water, groundwater and soil). Large-scale pollutant impacts (watersheds, climate change) are addressed. Emphasis is also given to techniques applied to assess and remedy environmental damage. Prerequisite: ESS 101 (BIO 202 is recommended)

**ESS/BIO 312**  
**Wetlands Ecology**  
This course covers the ecology of freshwater and saltwater wetlands systems. Linkages between the plants, animals, microbes, hydrology, and chemistry of various wetland types are emphasized. Wetland delineation, functional assessment of wetlands, and wetland creation and restoration are among the topics discussed. Field trips and laboratory sessions focus on quantitative evaluation of the hydrology, soils, and plant and animal communities of various wetland types. Three hours lecture and three hours laboratory per week. Prerequisite: BIO 202 or permission of instructor

**ESS/BIO 315**  
**Watershed Hydrology and Water Resources**  
Water is perhaps our most vital resource, yet its availability is often taken for granted. This course covers the principles of hydrologic processes that govern water distribution within a variety of landscapes. The influence of land use (e.g. rural, agricultural, urban) on water availability and quality are addressed. Watershed management issues and practices are also discussed. In the laboratory portion of the course we use field techniques to quantify hydrologic processes and water quality in surface waters and groundwater. The use of biological indicators to assess ecosystem health are also employed. Geographic Information Systems (GIS) is utilized to analyze field measurements on a landscape scale. Prerequisite: ESS 101 is recommended

**ESS/BIO 316**  
**Conservation Biology**  
This course is the study of preserving and restoring nature and ecosystem processes. It introduces students to the anthropogenic problems facing ecosystems and some of the
possible solutions. Theory and application pertaining to biodiversity, species extinction, biological invasions, land management, and other topics are discussed. Three hours lecture per week. Prerequisite: BIO 201, BIO 311 recommended

ESS 325
Geographical Information Systems
This course introduces students to many of the concepts and methodologies used in geographic information systems (GIS). Students learn where to obtain existing data, how to convert and analyze that data, and the applications of GIS to environmental and other fields of study. Students also learn how to use a global positioning system (GPS) to collect field data and integrate it into a GIS. They will apply their new tools to real-world situations. Previous examples include cataloging and categorizing the Reading Riverfront for urban revival efforts and determining the relationship between incidence of cancer and proximity to industrial plants based on health surveys from Pottstown, Pa. This course includes a one-hour lab each week immediately following one of the lecture periods. Physical sciences elective for environmental sciences.

ESS 400
Environmental Capstone Seminar
This course seeks to integrate the experiences of environmental concentrators around an investigation, theme or project. The character of the course depends on student and faculty interests as well as the nature of current events relating to the environment. This capstone seminar emphasizes problem-solving, critical thinking and direct application of the diverse backgrounds of students concentrating in environmental areas.

Other Environmental Courses

ANT 101
Introduction to Cultural Anthropology
The science of culture focuses on the learned behavior of the human species. Cross-cultural comparisons of a variety of human behaviors provide insights to the question of what it means to be human. Satisfies general studies social science requirement.

ANT/IDS 206
Food and Culture
The focus of this course is on what humans eat and why? Both the biological and cultural reasons for human food choices are explored. As omnivores humans evolved into a species that is not only capable of but also needs to eat a wide variety of foods. Culturally, we have developed certain desires for particular foods over others and have identified ourselves based on foods we eat: this has even produced differences in food choices based on social status. Finally, new food production and processing capabilities of the modern industrial world have thrown open the floodgates and have allowed us to both overeat and overspecialize in certain food types. This course examines the extremely complex interplay of all these forces on the foods we eat and the resulting health and ecological effects.

ANT/PSY/IDS 265
Ecological Psychology
The objectives of this course are: to understand the psychological origin and scope of current environmental problems and how they relate to our values, attitudes and behaviors; to study human experiences and behavior in its environmental, political and spiritual context; to question the human institutions and values that lead to environmental problems; and to explore the role of humans within the larger ecosystem.
ANT/IDS 285
The Human Animal
What are humans and how did we get to be the way we are? How do we live? What makes us act the way we do? Are we moral? How do we effect other species and the world around us? These are the questions we will investigate in this course, and to answer them we will take an interdisciplinary approach drawing on the disciplines from both the natural (biology, ecology) and social (anthropology, sociology) sciences to provide insights into the heart and soul of the human species. After examining the process of natural selection we will explore how it forged modern Homo sapiens over the last 5 million years. We will then look at the finished product both in terms of our mental and physical characteristics. The investigation will be completed by examining how we (humans) tend to interact with other species and our surrounding environment. It is hoped that many of the complexities and confusion about who we are will become more clear as we develop an understanding of both our capabilities as well as our limitations. Overall, students should gain a more complete comprehension of who they are as a member of the human species.

BIO 211
Ecology
This course studies the relationships between animals and plants and their natural environments. Factors shaping the distribution and abundance of organisms, populations and communities are discussed. Specific emphasis is given to factors such as competition, predation, herbivory, mutualism, physiology, climate, energy flow, and biochemical cycles that influence species adaptations and, in turn, patterns of distribution and abundance. The laboratory is designed to provide experience in the field using several techniques for monitoring both plant and animal populations, as well as environmental parameters in a variety of habitats. Three hours lecture, three hours laboratory per week.

ECO 224
Environmental Economics
This course explores the application of economic principles to a variety of environmental problems. Attention is given to the economics of resource depletion, waste disposal, population growth and economic growth.

HIS 280
Living on Earth: An Ecological Approach to the American Past
This course brings a wide range of new ways of making sense of more than 500 years of American history. Much more than a chronicle of the environmental movement, the course considers the interrelationships among various lifeforms- plant, animal, microbial - in particular landscapes and climates, human strategies and technologies for wresting a living from the Earth, and value systems that have long promoted or, more recently, questioned economic developments, the basis for the American Dream. Particular themes include the impact of disease on American demography; conflict between Indian and European uses of land; the introduction of exogenous species and the extinction or near-extinction of indigenous ones; development of industrial-capitalistic modes of resource exploitation in the 19th century; and the social costs of that exploitation in our time.

PHI 270
Environmental Ethics
Human activities have changed conditions on earth on a massive scale and threaten to cause the greatest mass extinctions since the end of the dinosaur age. The world population continues to grow, resulting in the degradation of air, water and land and the depletion of natural resources. However, people need to be fed and sheltered and our demand for energy continues to grow. Such environmental problems raise important questions on how we should live. What obligations do we have concerning the environment? What justifications can we give for the protection of wildlife, land and water? Does nature have value apart from human needs? What do we owe future human beings? Are some parts of nature more valuable than others? This course examines and assesses critically various responses to these and other questions.

POL 320
Politics and the Environment
This course develops the idea that there are three contending views or "discourses" about how to frame environmental politics: scientifically or technically; economically; or as an exercise or test of democracy. By the end of the semester students will be able to identify these discourses and see them at work in contemporary debates over environmental issues.

POL 321
Environment Policy
After a brief history and discussion of the theory behind environmental policy this class will devote its time to an extended description and critical discussion of specific environmental policies. This discussion is broken into two main categories: policies dealing with pollution and public health (including waste and air and water pollution), and policies dealing with land management and the public realm (including agriculture, public lands, and sprawl).

REL 280
Religion and the Environment
This course examines how the teachings and practices from various world religions have affected the human understanding of our relation with the natural world. It examines both the positive and negative impact of religious communities on ecological communities. In doing so, we will attempt to clarify to what extent, if any we might turn to religious systems as a foundation for environmental stewardship.

PSY 350
Animal Cognition and Behavior
An evolutionary approach to the study of human and animal behavior with emphasis on animal minds, including perception, attention, conditioning, representation, concept and rule learning, tool use, communication, self-awareness, awareness of the other, ecological significance, and adaptive function. The methods, research, and theories of comparative psychologists, ethologists, and sociobiologists are discussed in relation to reproductive strategies, social behavior, aggression, and especially cognition. Includes discussion of the evolution of behavior as determined by selection pressures in the organism's environment, the role of genetics and the environment in the development of behavior, and the pros and cons of ethological method of studying behavior in a natural environment versus a laboratory setting.

SOC 291
Environmental Sociology
This course will focus on the interconnections between social systems and ecosystems. Cultural, economic, social and environmental paradigms will be examined as to their
effect on a wide range of ecosystem scales. By using a sociological focus to examine complex environmental issues, students will gain a deeper understanding of how these issues can be resolved in a fair and equitable way. Specific topics covered will include consumption, global warming, environmental movements, international and domestic development, food and agriculture, etc. All topics covered in the course will maintain a specific focus on their effects on the environment and the role that social systems play within them.

SPP J51
Protecting Endangered Species: Hawaiian Humpback Whale
In this Interim course, you will study the biology and behavior of humpback whales while you directly observe and record their spectacular behaviors from a shore station and from boats in Maui. You will learn and apply the principles of field research design as you participate in an ongoing field study on the impact of boats on the behavior of the humpback whales. We will consider the causes and consequences of extinction of species and the environmental crisis and you will have the opportunity to get involved in the politics of protecting this endangered species. In addition to studying whale behavior and biology, you will be introduced to the field of ecopsychology, which studies the relationship between our psyches and the Earth, between human beings and the natural world. You will have the opportunity to renew and redefine your relationship with nature.