
Environmental Studies (undergraduate)

The environmental studies major provides undergraduates with an interdisciplinary program in which to study the interrelationships of humans and their environment and the practical problems resulting from these relationships. In addition to taking the courses required of all majors, an environmental studies major completes a specialization developing a cross-disciplinary perspective, with a problem-oriented focus. Within the framework of the environmental studies major, a student may obtain the interdisciplinary background prerequisite for such professional fields as planning, policy analysis, resource management and environmental analysis.

Because of the diverse background required of students majoring in environmental studies, prospective majors must plan their academic program carefully. The environmental studies committee recommends that majors complete the general requirements for the environmental studies major by the end of their sophomore year (see below). This includes a college-level chemistry course that is a prerequisite for required courses. At the time students declare their intention to major in environmental studies they should, in consultation with their adviser, decide on the courses making up their specialization and plan their academic program for the junior and senior years.

Environmental Studies Major

The environmental studies major leads to either a BA or BS degree. There are three parts to each degree program: 1) a set of five core courses; 2) two problem-oriented courses; and 3) a specialization. Introductory chemistry is a prerequisite for both degrees.

BA DEGREE PROGRAM

Courses required for the BA degree include:

1. Five core courses:
ENVI 101 and 201
MATH 147. Statistics or
MATH 221. Calculus
ECON 160
ENVI 215 or ENVI 149
2. Two problem-oriented courses, usually taken in the senior year, selected from ENVI 397, 413, 415, 495, 498.
3. A specialization made up of eight courses. Approved specializations include: (1) ecosystems; (2) earth sciences and natural resources; (3) public policy, administration and law; (4) environ-

mental planning; (5) environmental economics; (6) ecological anthropology; and (7) environmental chemistry.

BS DEGREE PROGRAM

Courses required for the BS degree include:

1. Five core courses:
ENVI 101 and 201
MATH 147. Statistics or
MATH 221. Calculus
ECON 160
ENVI 215 or ENVI 149
2. Two problem-oriented courses, usually taken in the senior year, selected from ENVI 397, 413, 415, 495, 498.
3. A specialization made up of 11 courses. Approved specializations include: (1) ecosystems; (2) earth science and natural resources; and (3) environmental chemistry.

A list of the specific course requirements for each specialization is available in the Geological Sciences and Environmental Studies Department office. Courses approved for environmental studies specializations are drawn from the offerings of anthropology, biological sciences, chemistry, economics, geography, geological sciences, political science and others.

Except for internships, courses taken Pass/Fail may not be counted toward the major. ENVI 101 and 201 may be used to fulfill the all-college science requirement. A grade of D is not considered satisfactory for courses applied to the major.

COURSE OFFERINGS

NOTE: Unless otherwise noted, all undergraduate courses carry 4 credits and are offered every year.

ENVI 101. ENVIRONMENT AND MAN/WOMAN: AN ECOLOGICAL PERSPECTIVE

Multidisciplinary approach to study of relationships between environment and humans, from ecological perspective: scope and direction of human impact on biosphere, exemplified by population, agricultural practices, pollution.

ENVI 121 (also GEOG 121). POLLUTION: NATURAL AND UNNATURAL

Did you know that pollution has natural and unnatural (anthropogenic) sources? Because pollution doesn't respect political or geographical boundaries, how do practices and policies in developed countries affect the Third World and vice versa? How much of the global warming and acid rain problem is natural in origin? Why are anthropogenic compounds such as CFCs, DDT and PCBs such a concern? How do natural events such as volcanic eruptions, forest fires and dust storms pollute large portions of the world? Who is responsible for the pollution found in the world's oceans and ice sheets? As the semester unfolds, you will discover the answers to these and related ques-

tions by learning how to integrate science and policy perspectives on a global scale.

ENVI 149 (also PHIL 149). ENVIRONMENTAL ETHICS AND POLICY

Examination of the major philosophical issues surrounding the environment and nature. Topics may include the value of nature; human obligations to the land, endangered species, nonhuman animals, ecosystems and future generations; vegetarianism; aesthetics and the environment; environmental racism; global warming; resource depletion; implications of environmental issues for ethical theory.

ENVI 201. ENVIRONMENT AND MAN/WOMAN: PHYSICAL ASPECTS

Interdisciplinary holistic view of interaction of human populations with their physical environment. Environmental problems consequent to such interactions. Energy in natural and human ecosystems: sources, environmental impacts, relationship to ecological stability. Alternative forms of human interaction with physical environment, human species as viable, long-term proposition. Prerequisites: ENVI 101 or BIOL 114, and Introductory Chemistry.

ENVI 212. ENVIRONMENTAL LAW AND POLICY

Environmental laws as perceived and dealt with by various judicial, legislative and administrative units. Pollution case law. Impact of economics and technology on environmental laws (as fashioned by legislatures and interpreted by the courts). Policy as well as legal doctrine. Prerequisite: ENVI 101.

ENVI 215 (also PLSC 215). ENVIRONMENTAL POLICY

Introduction to public policy analysis combined with applications to environmental problems and issues. Focus on political context of environmental issues and policy making; consideration of special problems arising from distinctive scientific bases of environmental issues. Prerequisites: ENVI 101 and 201 or PLSC 111.

ENVI 317. ENVIRONMENTAL SCIENCES AND PUBLIC POLICY

Case study analysis of interaction between scientists and policy makers in selected environmental problem areas. Topics change from year to year, with the most recent focus on global environmental problems. Recent publications serve as the catalyst for study and analysis of numerous interrelated global environmental problems. Students are expected to write term research paper and make oral presentation. Prerequisites: ENVI 101, 201 and 215.

ENVI 320. ENERGY AND THE ENVIRONMENT

Review of energy use and sources on a global scale. Focus on major sources utilized today, including petroleum, natural gas and nuclear energy, as well as on alternative or renewable sources. Exploration of advantages and disadvantages of presently used energy types, distribution of generating and disposal facilities and environmental impacts of choice of energy type or site. Discussion of future needs, supplies and sources. Review of alternate and renewable sources and impact of new technologies. Prerequisite: one of ENVI 201, GEOL 111 or GEOL 113.

ENVI 323 (also GEOG 323). SOILS, PROPERTIES, PROCESSES AND DISTRIBUTION

Morphological properties of soils as natural bodies, factors in processes of development, systems of classification at topographic, regional and global scales. Soil fertility and its role in land use. Prerequisite: GEOG 121 or ENVI 201.

ENVI 325. ECOLOGICAL PRINCIPLES AND AGRICULTURAL PRACTICES

Agricultural systems in Western and non-Western systems in relationship to ecological principles; factors affecting long-term stability. Plant-soil relationships as dynamic system. Ecologically based agricultural techniques in garden situation. Prerequisite: ENVI 101.

ENVI 326. FORESTS, ENVIRONMENT AND CIVILIZATION

Basic ecology of forests and trees. Forest types of the world and factors determining their occurrence. The role of forests in history. The significance of forests in regard to current major environmental problems, e.g., global warming, desertification, loss of biodiversity and flooding. The socio-political factors threatening forests. Forest preservation efforts. Prerequisites: ENVI 101 and 201, or permission of instructor.

ENVI 330 (also GEOG 330). NATURAL HAZARDS

every other year

Analysis of physical, geographic, political and perceptual aspects of natural hazards. Discussion and evaluation of physical environments in which natural hazards occur, land use and development patterns in hazardous areas, mitigation measures and risk assessment, and perception of hazards and vulnerability. Prerequisites: ENVI 101 and 201; junior or senior standing.

ENVI 339 (also GEOG 339). ENVIRONMENTAL MANAGEMENT

Environmental, economic, geographic and cultural determinants of resource management. Policy goals and decision-making elements influencing management of environmental and natural resources. Management policy, practice and theory. Prerequisites: ENVI 101 and 201, or one of GEOG 121, 232, 233 or 235.

ENVI 340. NATURAL RESOURCES LAW AND POLICY

Examination of laws and policies that regulate and affect the use of natural resources, including water, rangeland, wilderness, metal ores, timber and energy resources. Laws that affect use of resources, from common law to government statute and regulation. Emphasis on case law and effects of case law on public policies. Prerequisites: ENVI 101 and 201 or permission of instructor.

ENVI 342. SURFACE AND SUBSURFACE HYDROLOGY

Introduction to important descriptive and analytical elements of surface and subsurface flow. Topics include: global and local hydrologic budgets; stream hydrograph analysis; geology of groundwater; principles of groundwater flow; water chemistry and contamination; groundwater modeling; and case studies of contamination and remediation. Prerequisites: ENVI 101 and 201.

ENVI 358 (also BIOL 358). AVIAN ECOLOGY AND CONSERVATION

2 credits

Basic biology of birds, focusing on characteristics affecting their ecological role. Conservation issues involving birds. Six to eight field trips emphasizing identification, behavior and ecology; two of these field trips on weekends. Prerequisite: BIOL 114.

ENVI 361 (also BIOL 361). FRESHWATER WETLAND ECOLOGY

2 credits

Structure and function of various freshwater wetland types, including swamps, marshes, fens and bogs. Use of indicator plants to identify wetland types. Laboratory time will involve field trips to different wetland types, learning to identify wetland plants and making a collec-

tion. Lecture and laboratory. Prerequisite: BIOL 114.

ENVI 370 (also GEOL 370). ENVIRONMENTAL GEOLOGY: THE CHANGING EARTH

Examination of important environmental issues through geochemical investigation of the Earth's atmosphere, hydrosphere and lithosphere. Discussion of past and present controls on the chemical composition of the atmosphere, freshwaters, oceans and groundwaters. Prerequisites: CHEM 107 (or consent of instructor), and one of the following: GEOL 111, 113 and 114, or ENVI 201.

ENVI 382. SPECIAL TOPICS IN ENVIRONMENTAL STUDIES

Intensive study of a particular topic announced in advance. May be repeated for credit. Prerequisite: junior or senior standing.

ENVI 397. INDEPENDENT STUDY *variable credit*

Independent study under guidance of faculty member. Prior to registration, student must consult with the faculty supervisor and receive approval of problem to be studied and amount of credit to be received.

ENVI 413. ENVIRONMENTAL IMPACT STATEMENTS

National Environmental Policy Act and its requirements. Environmental impact statements: what they are, how they came into being, their role in environmental decision making. Techniques of making environmental Impact assessments. Analysis of actual impact statements made on highways, mining and housing projects. Prerequisites: ENVI 101, 201 and 215.

ENVI 415. ENVIRONMENTAL PLANNING

Environmental considerations of planning process. Past and present planning programs examined; emphasis on techniques and methods used to integrate environmental knowledge with other aspects of planning process. Land use controls, planning for and protecting resource use and allocation alternatives, use of regions as management units. Lab work involves practical applications of techniques and tools to problem solving. Prerequisites: ENVI 101, 201 and 215.

ENVI 457 (also PHIL 457F). ENVIRONMENTAL ETHICS AND POLICY

Philosophical problems involving the relationship between humans and the environment. Examination of nonanthropocentric assumptions and anthropocentric theories. Evaluation of issues involving obligations to future generations and the use of economic instruments to ensure environmental quality. Prerequisite: ENVI/PHIL 149 or consent of instructor.

ENVI 482 (also PLSC 456). ENVIRONMENTAL POLICY ANALYSIS

Environmental policy making as a process and the substance of environmental policy. Policy evaluation, different types of analysis, regulation and deregulation, consideration of current environmental problems. Prerequisite: PLSC 213 or 215, or ENVI 215.

ENVI 491. PRACTICUM IN COLLEGE TEACHING

Independent study by teaching ENVI courses, particularly ENVI 101 or 102. Assignments include leading discussion sections, maintaining office hours, reading papers and examinations. Closely directed by instructor. Open only to seniors. P/F option only. Prerequisite: consent of instructor.

ENVI 495. INTERNSHIP IN ENVIRONMENTAL STUDIES

variable credit

Internship in public agency or consulting firms dealing with environmental planning and management issues. Prerequisite: consent of instructor. P/F option only.

ENVI 498. SENIOR THESIS

Independent in-depth research under supervision of a faculty member. May be taken as a one-semester project, or as a precursor to the Honors Thesis (ENVI 499). Prerequisite: approval of the faculty supervisor.

ENVI 499. HONORS THESIS

Preparation and defense of an honors thesis. Usually an extension of the work undertaken in ENVI 498. Prerequisites: ENVI 498 and recommendation of faculty supervisor.