

# Environmental Studies

Because of the interdisciplinary nature of the major, curricular recommendations are provided by the Environmental Studies Advisory Committee: Professors Amy (politics), Bubier (environmental studies), Christiansen (economics, on leave 2011–2012), Dunn (geology), Kebbende (geography), Rachootin (biological sciences), Savoy (environmental studies, on leave spring 2012), Schwartz (history), Werner (geology); Associate Professors Farnham (environmental studies), Hoopes (biological sciences, on leave 2011–2012), Millette (geography, on leave fall 2011); Assistant Professor Corson (environmental studies).

## Contact Persons

Lauret Savoy *chair, fall 2011*

Jill Bubier and Tim Farnham, *cochairs, spring 2012*

Donna McKeever, *senior administrative assistant*

The study of environmental problems is inherently interdisciplinary. One cannot understand their origin, impact, or potential solutions without analyzing the behavior of natural systems, as well as their interaction with economic, political, and cultural factors. The environmental studies major provides students with an appreciation of the interdisciplinary nature of environmental issues and includes courses from the humanities, natural sciences, and social sciences. The program is concerned with the interactions between people and their environment, the effects the environment has on people, and the impact of human activities on the environment.

We encourage students considering graduate work or professional employment in environmental sciences to take as many courses as possible in the cognate sciences (chemistry, biology, geology, and physics) and mathematics (through calculus).

## Requirements for the Major

### Credits

- A minimum of 48 credits, including an area of concentration

### Courses

- Environmental Studies 100 (4 credits), Introduction to Environmental Studies
- Five courses (20 credits) at the 200 level in different disciplines, selected from the approved list of courses. Two courses (8 credits) must be from the natural sciences and three courses (12 credits) must be from the humanities and social sciences.
- Environmental Studies 390 (4 credits), Senior Seminar in Environmental Studies
- Seven courses (28 credits) at the 200 and 300 level in an area of concentration (see details for each concentration). Independent study may be substituted for one of the required advanced level courses, with approval of advisor, but may not substitute for Environmental Studies 390. A maximum of two 200-level courses in the concentration may be used to fulfill core (Group A/Group B) 200-level requirements, where appropriate and subject to advisor approval.
- In addition to the courses required for the major, students must take one 100-level science course with laboratory and one course in statistics: Economics 220, or Statistics 140 or 240. (See additional statistics requirements for individual concentrations.) These credits are not counted in the major, although required for the major.
- Students may take up to one 200-level and two 300-level courses off campus (study abroad, Five Colleges, etc.). A second different 200-level course may be taken within the Five Colleges. One additional Five College course at the 200- or 300-level may be taken but must be approved by advisor.

*Environmental studies is an interdisciplinary major. Students who pursue an interdiscipli-*

nary major automatically fulfill the College's "outside the major" requirement.

Upon completing the major, students should have a solid working knowledge of those areas in the humanities, social sciences, and natural sciences that are related broadly to contemporary environmental issues. The pre-requisites and intermediate courses provide necessary breadth and foundation. The advanced courses afford the opportunity to concentrate on a detailed exploration of a particular environmental topic.

## Selecting Initial Courses

Students interested in environmental issues should register for Introduction to Environmental Studies (Environmental Studies 100) during their first year. This course is required for both the major and the minor in environmental studies and provides a broad overview of the field. It also gives students a good sense of how to continue their studies in the environmental field. Other courses that are very useful for first-year students include Biology 145, Chemistry 101, Geography 105, Geography 107, Geology 100, Geology 101/107, Geology 103, Physics 103, Physics 115, and Statistics 140.

All students must take a 100-level lab science course (required for the 200-level lab science courses in environmental studies) and a course in statistics—either Statistics 140 or 240, or Economics 220. These credits are not counted in the major, although required for the major.

## Intermediate Courses

Twenty credits (five courses) at the 200 level are required, of which 8 credits (two courses) must be from the natural sciences (one course must be Environmental Studies 200, Environmental Science, or Biology 223, Ecology, or Geology 203, Surface Processes). Twelve credits (three courses) must be in different disciplines from the humanities and social sciences (one social science course must be either Economics 203, Environmental Economics, Environmental Studies 210, Political Ecology, or Politics 266, Environmental Politics in America). At least one of

these three courses must be an approved humanities course. These courses should be chosen from the list of courses approved by the Environmental Studies Advisory Committee (see list below). This list of courses is also available at the department office or website, or from any member of the advisory committee. Other courses may be counted toward this requirement with the approval of environmental studies advisor.

Additional 200-level courses are required for the concentration (see details below).

## Advanced Courses

Environmental studies majors must take at least four 300-level courses; one *must* be Environmental Studies 390, Senior Seminar, and three to four 300-level courses within the concentration (the number of 300-level courses is dependent on the concentration). Independent study (Environmental Studies 395) may be substituted for one of the required advanced courses, with approval of advisor.

## Areas of Concentration

Environmental studies majors must choose an area of concentration around which to organize their advanced course work. The recommended concentrations (and advisors) are: Conservation (Hoopes, Bubier, Farnham); Ecosystem Science (Bubier, Hoopes); Environment and Development, *formerly Sustainable Development* (Corson, Farnham, Kebede, Savoy); Environmental Politics, Policy, and Economics (Amy, Christiansen, Corson); Geoscience (Dunn, Werner); Natural History, *formerly Organismal Biology* (Rachootin); and Nature/Culture/History (Farnham, Savoy, Schwartz). Students must choose their concentration by advising period of the second semester of their sophomore year. Self-designed concentrations require approval by the Environmental Studies Advisory Committee.

## Requirements for the Minor

### Credits

- A minimum of 20 credits

## Courses

- Environmental Studies 100, Introduction to Environmental Studies
- A minimum of 16 credits above the 100 level, including at least one course (4 credits) at the 300 level. Of these, 8 credits should be from the natural sciences and 8 from the social sciences and/or humanities.

These courses should be chosen from the list of approved courses (see below), which is available at the department office or website, or from any member of the Environmental Studies Advisory Committee. Other courses may be counted toward the minor with the approval of the environmental studies department chair.

## Course Offerings

### 100s Introduction to Environmental Studies

This course introduces students to the field of environmental studies and to some of the scientific, historical, political, economic and cultural aspects of environmental concerns. Through interdisciplinary lenses, we explore the complexities of many issues and problems such as climate change, threats to biodiversity, and toxic environments. In addition to fostering an understanding of their origins, the course focuses on potential solutions.

*Does not meet a distribution requirement*  
C. Corson  
4 credits

### 200f Environmental Science

(Community-Based Learning course) Most of our society's environmental problems are complex and interdisciplinary in nature. Environmental science is a course designed to teach integrative thinking, the "scientific method," and problem solving. Lectures will be drawn from a variety of scientific fields including ecology, hydrology, chemistry, geology, and biology with an emphasis on ecosystems and biogeochemical cycles. The course will use case studies of regional environmental problems, practical hands-on problem solving, and landscape analysis. Training in field and laboratory techniques is

an integral part of the course. Priority given to environmental studies majors.

*Meets Science and Math II-B requirement*  
J. Bubier

*Prereq. One 100-level lab science; one course in statistics is recommended; 4 credits*

### 210f Political Ecology

This course will explore the historical, political, economic, social, and cultural contexts in which human-environment interactions occur. We will cover critical topics and trends in the field of political ecology, from its early manifestations to more recent expansions. Using case studies from the global south and north, we will discuss factors that shape social and environmental change across scales from the personal to the global, and we will examine the role of gender, race, class, and power in struggles over resources. Students will become familiar with the academic debates in which political ecologists are engaged, and they will apply the concepts discussed in a case of their choice.

*Meets multicultural requirement; meets Social Sciences III-A requirement*

C. Corson

*Prereq. soph; 4 credits*

### 240f The Value of Nature

Through this seminar, students develop an in-depth knowledge of and articulate vocabulary for the significant and diverse ways that humans value the natural world - utilitarian, scientific, aesthetic, naturalistic, symbolic, ethical, and spiritual. We use these different typologies of human environmental values as frameworks for readings and discussion, extending our examination to historical and cultural variations in values, competing perspectives of the natural world, and other value concepts, including intrinsic and transformative value. We examine the concept of biophilia and probe the role values play in the concern over losses of biological diversity and its implications.

*Meets Humanities I-B requirement*

T. Farnham

*Prereq. Environmental Studies 100; gateway course in minor in conceptual foundations of science; 4 credits*

**241s Environmental Issues**

In this course, we will explore the different facets of numerous environmental policy issues and review the substantive aspects, legal themes, and regulatory structure of the major federal environmental laws. The laws covered in this course include the National Environmental Policy Act, the Clean Air Act, the Clean Water Act, the Endangered Species Act, and others. The course objectives are for the student to learn the basic regulatory characteristics of the major laws and to become well-versed in the current environmental issues which we will focus upon throughout the semester, such as global climate change, ocean degradation, energy resources, and biodiversity loss.

*Does not meet a distribution requirement*  
T. Farnham

*Prereq. Environmental Studies 100; 4 credits*

**267f Reading and Writing in the World**

(Writing-intensive course; Same as English 267) An introduction to reading and writing about nature, this seminar will attempt an exchange across distinct approaches to observing and describing the world around us. Do lenses of culture, discipline, and gender determine how we see and experience nature, environment, and place? Course work will include reading such authors as N. Scott Momaday, Henry David Thoreau, bell hooks, Leslie Marmon Silko, Mary Oliver, Terry Tempest Williams, Wendell Berry, and Annie Dillard; field trips; and writing assignments—weekly field notes and journals, analytical papers, and personal essays.

*Meets Humanities I-A requirement*

L. Savoy, J. Lemly

*Prereq. You must apply for admission to this course by completing the online application form; 4 credits*

**295fs Independent Study**

*Does not meet a distribution requirement*  
The department

*Prereq. soph, jr, sr, and permission of instructor; 1-4 credits*

**\*317s Perspectives on American Environmental History**

(Speaking- and writing-intensive course) We explore the history of human-environment interactions in North America from precolo-

nial times to the present from different cultural perspectives. How have such human activities as migration, colonization, and resource use depended on or modified the natural world? How have different cultural perceptions of and attitudes toward environment shifted through time and helped to reshape American landscapes? Case studies include ecological histories of Native America and Euro-America, slavery and land use, wilderness and conservation, and environmental racism and social justice. Our approach entails historical review of scientific studies, literature, visual records, and oral tradition.

*Meets Social Sciences III-A requirement*

L. Savoy

*Prereq. permission of instructor; 1 meeting (3 hours) and optional fourth hour; 4 credits*

**321fs Conference Courses in Environmental Studies**

Selected topics in areas of environmental interest, determined by faculty expertise and student needs. Study in small groups or by individual students working with faculty.

*Fall 2011*

*321f(1) Response to Environmental Contaminants and Evolution: Communicating the Science to the Public*

(Speaking- and writing-intensive course; Same as Biological Sciences 321D) It is essential for scientists to communicate their findings to the public. Students will learn the basic concepts of toxicology—the study of chemical contaminants—and they will consider how toxicity is both a product and a selective force in the evolution of particular groups of organisms. They will research particular toxicants—their chemistry, physiological effects in different kinds of organisms, and the environmental and evolutionary contexts for varying susceptibilities and responses. Their findings will be the basis of articles written for online publication in the Encyclopedia of Earth, a freely available, expert-reviewed collection of articles written in non-technical language.

E. Monosson

*Prereq. 8 credits from any of the following departments: environmental studies, chemistry,*

*biochemistry, biological sciences, geology; or permission of instructor; 4 credits*

*Spring 2012*

**321s(1) Wetland Ecosystem Research**

(Speaking- and writing-intensive course)

Peatlands have sequestered vast stores of soil carbon since deglaciation, accounting for approximately one-third of the global pool of soil carbon. This seminar will focus on responses of northern wetlands to climate change. In particular, we will address three main topics: the environmental controls on interannual and seasonal variability in CO<sub>2</sub> and CH<sub>4</sub> gas exchanges, the responses of plant communities along hydrologic and nutrient gradients to climate variability, and the influence of atmospheric nitrogen deposition on carbon exchanges and vegetation. Group discussion of primary scientific literature, independent research, and investigation of research methods are core components.

*J. Bubier*

*Prereq. At least 8 credits of 200 or 300-level laboratory science, and permission of the instructor.; 4 credits*

**\*333s Landscape and Narrative**

(Speaking- and writing-intensive course)

Different stories or narratives—whether myth, literature, maps, or scientific theory—have been created about every region or environment on Earth as human attempts to describe and understand our connections with that place. How do braided strands of human history and natural history contribute to stories we tell of the land, and to stories we tell of ourselves in the land and of relational identity? In this reading and writing seminar we will reflect on how lifeways, homeplace, and identity of an individual or a community are linked with environment or the land. We will also create written and visual narratives of our own and explore creative environmental writing in reflection and action.

*Meets Humanities I-A requirement*

*L. Savoy*

*Prereq. jr., sr., permission of instructor; 4 credits*

**340s Political Economy of International Conservation**

This course uses concepts from political ecology to study the relationship between global political economy and environmentalism. Scholars from a variety of disciplines have charted the rise of a neoliberal economic paradigm in global political economy during the past 40 years. Drawing on a range of literature, we will reflect on changing perceptions of the market in international conservation policy during this time period. We will consider the political and ecological impacts of changing ideas, and associated conservation practices, including natural resource limits to growth, sustainable development, community conservation, market-based approaches, and corporate social responsibility.

*Meets Social Sciences III-A requirement*

*C. Corson*

*Prereq. Environmental Studies 210; 4 credits*

**341f Science and Power in Environmental Governance**

This course applies concepts from political ecology to study how governance, broadly defined, works in relation to the environment. Using case studies of international environmental issues, we will explore how people make decisions about the environment in a policy realm. We will discuss the role of various agents, such as governments, scientific bodies, and nongovernmental organizations, in the decision-making process. We will reflect on who has access to decisions; how scientific data is used; how environmental ideas become powerful; and how policies are legitimated. Armed with this information, we will consider how to advocate for global environmental sustainability and social equity.

*Meets Social Sciences III-A requirement*

*C. Corson*

*Prereq. Environmental Studies 210; 4 credits*

**\*344s Biogeochemistry of Northern Ecosystems**

(Speaking- and writing-intensive course)

Global climate models and recent evidence show that ecosystems in the northern latitudes are extremely sensitive to climate change. This interdisciplinary science course examines boreal, subarctic, and arctic ecosystems through the study of nutrient cycling,

plant ecology, hydrology, soil processes, and biosphere-atmosphere interactions. Topics include fundamentals of biogeochemical cycling of major elements such as carbon and nitrogen at scales from the microscopic to global, sensitivity and feedbacks to climate change, and disturbance processes such as fire and permafrost degradation.

*Does not meet a distribution requirement*

*J. Bubier*

*Prereq. at least 8 credits of 200-level lab science and permission of the instructor. Global Biogeochemistry (Chem 232) recommended.; 4 credits*

### **373s Nature and Gender: Representations of Women and Nature in American Literature (Nineteenth-Twentieth Century)**

(Same as English 373 and Gender Studies 333) This course will focus on portrayals of women in nineteenth through mid-twentieth century America, particularly in the context of nature and landscape. We will explore how women, often objectified in visual images of the period, appropriated established devices or developed new images and structures to represent womanhood in their own terms. Texts will include selected poetry, sketches, autobiographical essays or memoirs, short stories, novels, paintings, films, and photography.

*Meets Humanities I-A requirement*

*L. Glasser*

*Prereq. jr, sr, 8 credits from the department or permission of instructor; 4 credits*

### **390f Senior Seminar in Environmental Studies**

(Community-Based Learning course) This is the capstone course of the environmental studies major. The course explores linkages among the diversity of disciplines that contribute to the environmental studies major, illustrates how these disciplines that contribute to the environmental studies major are used in environmental decision making, enables students to inform one another's roles as environmentalists, and provides students with opportunities to develop individual and cooperative projects.

*Does not meet a distribution requirement*

*L. Savoy*

*Prereq. major; 4th hour TBD; 4 credits*

### **395fs Independent Study**

*Does not meet a distribution requirement*

*The department*

*Prereq. jr, sr, and permission of instructor; 1-8 credits*

## **Courses Offered in Other Departments**

In addition to courses in Environmental Studies, many courses for the major and minor in environmental studies are offered by other departments. A list of courses approved for both the major and minor in environmental studies appears below. It is also available at the department office or website, or from any member of the Environmental Studies Advisory Committee. Appropriate courses taken at Amherst, Hampshire, or Smith colleges or the University of Massachusetts may be counted toward the major or minor with the approval of environmental studies advisor.

Courses taken at other colleges or universities, or through accredited field studies around the world, may also be counted toward the major or minor with the approval of environmental studies advisor. See individual concentrations for recommended off-campus programs.

## **Core Intermediate Courses**

All students must take two courses from Group A and three courses from Group B. In Group A, one of the courses must be Environmental Studies 200, Environmental Science, or Biology 223, Ecology, or Geology 203, Surface Processes. In Group B, one of the courses must be Economics 203, Environmental Economics, Environmental Studies 210, Political Ecology, or Politics 266, Environmental Politics in America. One of the three Group B courses must be a humanities course.

### *Group A*

At least one of these three courses is required:

- Environmental Studies 200, Environmental Science *or*
- Biology 223, Ecology *or*
- Geology 203, Surface Processes

The second course may be one of the above or one of the following:

- Biology 200, Introductory Biology II: How Organisms Develop
- Biology 210, Genetics and Molecular Biology
- Biology 226, Evolution
- Chemistry 201, General Chemistry II
- Chemistry 202, Organic Chemistry I
- Geography 205, Mapping and Spatial Analysis
- Geography 224, Atmosphere and Weather
- Geology 201, Rocks and Minerals
- Geology 227, Groundwater
- Geology 240, Geological Resources and the Environment

Other courses may be counted toward this requirement with the approval of environmental studies advisor.

#### *Group B*

One of the following is required:

- Economics 203, Environmental Economics *or*
- Environmental Studies 210, Political Ecology *or*
- Politics 266, Environmental Politics in America

Students may take more than one of the above courses and the remaining course(s) from the following list. *Remember*, you must take at least one humanities course to fulfill the Group B requirement.

And two of the following:

Social Sciences:

- Anthropology 216, Special Topics in Anthropology: Anthropology of Nature
- Environmental Studies 241, Environmental Issues
- Geography 204, Human Dimensions of Environmental Change
- International Relations 241, Global Resource Politics (Five College Course)
- Politics 242, Oil and Water Don't Mix

Humanities:

- Architectural Studies 280, Topics in Architectural Studies: Issues in Sustainability: Adaptive Re-Use
- Art History 216, Empire: Art and Archaeology of the Roman Provinces
- Art History 243, Building the Modern Environment: Architecture 1890-1990
- Art History 290, Introduction to Archaeology
- English 202, Introduction to Journalism
- English 232, Global Diversity/European Modernity
- English/Environmental Studies 267, Reading and Writing in the World
- Environmental Studies 240, The Value of Nature
- History 214, History of Global Inequality
- History 256, Environmental History: Ecological Thinking and Practice in Europe, 1500 to the Present
- History 283, Mapping the Memorable: A Cultural and Environmental History of the Mount Holyoke College Campus
- History 284, History, Ecology, and Landscape
- Philosophy 240, Environmental Ethics: Nature/Culture/Values

Other courses may be taken with approval of environmental studies advisor.

### **Advanced Courses (300 Level)**

Environmental studies majors must take at least four 300-level courses. One of these 300-level courses must be Environmental Studies 390f, Senior Seminar in Environmental Studies. All environmental studies majors must declare a concentration by advising period, second semester of sophomore year. Environmental Studies 395, Independent Study, may be substituted for one of the required 300-level courses in the concentration. Note that many advanced courses will have additional prerequisites that may not count toward core course credit for an environmental studies major.

## Concentrations

Lists of the course requirements for each of our recommended concentrations are available from the environmental studies department office or website, or from any member of the advisory committee. Other courses may be taken with approval of environmental studies advisor.

Seven 200-level and 300-level courses are required for each concentration (the number of 300-level courses is dependent on the concentration). A maximum of two 200 level courses in the concentration may also count toward Group A and Group B requirements, where appropriate and subject to advisor's approval.

The concentrations (and advisors) are:

### Conservation (Hoopes, Bubier, Farnham)

The Conservation concentration allows students to focus on the science and policy behind conserving biodiversity and ecosystem function. (Statistics 240 is required for this concentration.)

### Ecosystem Science (Bubier, Hoopes)

Ecosystem Science is a field and lab-based interdisciplinary science concentration that examines the structure and function of terrestrial and aquatic ecosystems. (Statistics 240 is required for this concentration.)

### Environment and Development (Corson, Farnham, Kebede, Savoy)

The Environment and Development concentration deepens student understanding of the relationship between global environmental issues and human well-being around the world. Courses ranging from the political economy to environmental justice offer students opportunities to explore factors that shape human-environment relations across both the industrialized world and the global South.

### Environmental Politics, Policy, and Economics (Amy, Christiansen, Corson)

The Environmental Politics, Policy, and Economics concentration focuses on the study of the political, economic, historical, and cultural forces that shape environmental policies. Topics include: how environmental policies are made, which interests are most powerful in determining policies, how effective those policies are, and which groups are harmed or helped by those policy decisions.

### Geoscience (Dunn, Werner)

Nearly all environmental issues occur near or at the Earth's surface and involve earth materials. A Geoscience concentration introduces students to the geology associated with environmental studies issues.

### Natural History (Rachootin)

Natural History: the narratives of the natural world. Students in this concentration study the living worlds that have been and are being evolved, and can, if they wish, connect the living world to the physical processes that shape the Earth and produced the geological record. Planetary science, geology, biology, and physical anthropology guide these stories. Field experience is often an integral part of this endeavor.

### Nature/Culture/History (Farnham, Savoy, Schwartz)

The Nature/Culture/History concentration allows students to explore the changing relationships between human beings and the natural world through time, using the perspectives and tools of the humanities (such as history, ethics, literature, or creative writing). Major aspects of study could include the effects of shifting cultural conceptions of nature on environmental change, how environments affect human communities, and how environments are shaped through cultural and historical change. By integrating different perspectives, students also consider the meanings and representations of "environment" in language and culture.