

# Environmental Studies

## *Interdisciplinary*

The Environmental Studies Concentration provides an interdisciplinary framework for understanding the interactions of individuals, societies, and the natural world. The concentration brings together the different perspectives of the humanities, life sciences, physical sciences, and social sciences. The academic program is enhanced by the 400-acre Brown Family Environmental Center (BFEC). The BFEC, within walking distance of campus, features a wide range of natural and managed habitats and includes part of the Kokosing River (one of Ohio's State Scenic Rivers). In addition, Kenyon encourages students to think in more global terms through affiliations with the School for Field Studies (which provides classes in Australia, British West Indies, Costa Rica, Kenya, and Mexico) and the Organization for Tropical Studies, as well as through off-campus study opportunities like the Duke University Marine Laboratory and the Semester in Environmental Science at Woods Hole. Our goals are to increase basic knowledge in the relevant subjects and to learn techniques for evaluating complex issues, especially those with both technological and social components.

The implications of our interaction with the environment extend well beyond either natural or social sciences, however, as ethics and aesthetics are integral to those interactions. Consequently, the concentration in environmental studies knits together many traditional academic disciplines. In addition, the concentration can be integrated with a major in international studies, an interdisciplinary program.

### FACULTY

**Miriam Dean-Otting**, Codirector, Professor of Religious Studies

**M. Siobhan Fennessy**, Codirector, Professor of Biology

**Joseph A. Adler**, Professor of Asian Studies

**Jay R. Corrigan**, Associate Professor of Economics

**Scott D. Cummings**, Associate Professor of Chemistry (on leave)

**Bruce L. Hardy**, Associate Professor of Anthropology

**E. Raymond Heithaus**, Jordan Professor of Environmental Science

**Eric J. Holdener**, Assistant Professor of Physics and Scientific Computing

**Andrew J. Kerkhoff**, Assistant Professor of Biology and Mathematics

**Robert A. Mauck**, Associate Professor of Biology

**George E. McCarthy**, Professor of Sociology

**Wade H. Powell**, Associate Professor of Biology

**Joan L. Slonczewski**, Professor of Biology

**David N. Suggs**, Professor of Anthropology

**Stephen E. Van Holde**, Associate Professor of Political Science

### EMERITUS FACULTY

**Bruce L. Gensemer**, Professor Emeritus of Economics

**Ronald E. McLaren**, Professor Emeritus of Philosophy

**J. Kenneth Smail**, Professor Emeritus of Anthropology

**Note:** Additional faculty teaching courses approved for credit toward the concentration constitute its extended faculty. Consult a program codirector for a list.

**FIRST-YEAR AND NEW STUDENTS**

Students interested in ENVS are encouraged to take ENVS 112 in their first year. Other appropriate courses for first-year or new students include BIOL 115, CHEM 108, or ECON 101. Other introductory courses in affiliated departments may be taken as interests dictate.

**THE CURRICULUM**

The environmental studies program consists of four components: a one-semester introductory course, ENVS 112 (.5 unit); three semester courses in "core" subjects (biology, chemistry, and economics, for 1.5 units); a selection of 1.5 units (three courses) from affiliated courses in at least two departments; and a one-semester capstone seminar, ENVS 461 (.5 unit). The concentration requires a total of 4 units. Affiliated courses are offered in anthropology, biology, chemistry, economics, philosophy, physics, political science, religious studies, and sociology.

**CONCENTRATION REQUIREMENTS****Required Environmental Studies Courses: 1 unit**

- ENVS 112 (.5 unit) Introduction to Environmental Studies
- ENVS 461 (.5 unit) Seminar in Environmental Studies

**Core Courses in Environmental Studies: 1.5 units**

- BIOL 115 (.5 unit) Energy in Living Systems
- CHEM 108 (.5 unit) Solar Energy (CHEM 121 or 122 can serve as a replacement.)
- ECON 101 (.5 unit) Principles of Microeconomics

**Elective Courses for Environmental Studies: 1.5 units selected from the following courses:****Anthropology courses**

ANTH 111 Introduction to Biological Anthropology  
ANTH 320 Anthropology of Food  
ANTH 324 Biocultural Adaptations  
ANTH 333 The Neolithic

**Biology courses**

BIOL 228, 229 Ecology and Ecology Laboratory  
BIOL 251 Marine Biology  
BIOL 352, 353 Aquatic Systems Biology and Aquatic Systems Laboratory

**Chemistry courses**

CHEM 231, 233 Organic Chemistry I and lab  
CHEM 341 Instrumental Analysis

**Economics courses**

ECON 336 Environmental Economics  
ECON 342 Economics of Regulation  
ECON 347 Economics of the Public Sector

**Environmental studies courses**

ENVS 150 Environmental Geology  
ENVS 251 Field Experience: Environmental Outreach

ENVS 253 Sustainable Agriculture  
ENVS 300 Geographic Information Science

**Philosophy courses**

PHIL 110 Introduction to Ethics  
PHIL 115 Practical Issues in Ethics

**Physics course**

PHYS 108 Geology

**Political science courses**

PSCI 361 Globalization  
PSCI 363 Global Environmental Politics  
PSCI 480 Science and Politics

**Religious studies course**

RLST 481 Religion and Nature

**Sociology course**

SOCY 233 Sociology of Food

Because careful course selection is necessary to achieve specific objectives, students are urged to consult as early as possible with a program codirector and other faculty members in the Environmental Studies Concentration.

**ENVIRONMENTAL STUDIES COURSES****ENVS 112 Introduction to Environmental Studies**

*Credit: .5 unit*

This course examines contemporary environmental problems, introducing the major concepts pertaining to human interactions with the biosphere. We will explore both local and global scales of this interaction. Course topics include basic principles of ecology (flows of energy, cycling of matter and the role of feedback), the impacts of human technology, the roots of our perceptions about and reactions to nature, the social and legal framework for responding to problems, and economic issues surrounding environmental issues. We will discuss methods for answering questions regarding the consequences of our actions and, using a systems approach, focus on methods for organizing information to evaluate complex issues. The format of the course will be three-quarters discussion and lecture, one-quarter workshop. The workshops will include field trips, experience with collecting data, and application of computer modeling. This course counts as a biology course for the purpose of diversification. No prerequisites. Offered every spring.

*Instructor: Fennesy, Heithaus, Mauck*

**ENVS 150 Environmental Geology**

*Credit: .5 unit*

This course will examine some of the interfaces between people (individuals and societies) and our physical planet (geology). Topics for consideration include: rocks and minerals; plate tectonics; surface processes, streams, and flooding; coastal processes; mass movements; water resources and

groundwater; waste disposal; and energy resources. We will strive to understand the physical processes involved with each topic as well as the natural geologic time frame associated with each topic. The main emphasis of the course will be the exploration of how humankind responds to each topic, especially in light of our needs and much more limited temporal frame of reference. Lectures will be augmented by laboratories and demonstrations, and several local field trips will highlight the pervasiveness of geology in our everyday lives.

*Instructor: Holdener*

### **ENVS 251 Field Experience: Environmental Outreach**

*Credit: .13 unit*

In "Field Experiences", students will examine special topics in environmental science, gaining subject knowledge so that they can lead educational experiences for elementary school classes visiting the Brown Family Environmental Center at Kenyon College. Students will participate in two workshops at the beginning of the semester and then participate in at least five programs for visitors. Participants will keep a journal and submit a final report on their experiences and evaluations of the effectiveness of the programs. Prerequisites: ENVS 112 or BIOL 112 or equivalent or permission of the instructor.

### **ENVS 253 Sustainable Agriculture**

*Credit: .5 unit*

The purpose of the course is to introduce students to the principles of sustainable agriculture through hands-on experience on local farms and through readings of current literature. The course thus combines fieldwork and seminar-style discussion. Work on the farm will be varied, determined by the seasons and farm projects under way. In addition, students will be taken to the local Producers Livestock Auction and other off-farm sites as the time and season allow. Students can expect to handle and feed animals, clean barns, harvest and plant crops, prepare farm products for market, build and repair fences, bale hay, and work with, repair, or clean equipment and buildings. Readings will be drawn from relevant books, current environmental literature, and the news media. Discussions will be student-led and combine readings and their experiences in the field. There are no prerequisites for this course. However, students must have available in their academic schedule five continuous hours one day per week to spend working at a local organic farm (travel time will be in addition to these five hours). In addition, students will participate in a weekly seminar discussion of assigned readings, lasting from an hour and a half to two hours. Participation is limited to eight to ten students, and permission of the instructor is required. Preference will be given to upperclass students. Offered every fall.

*Instructor: Dean-Otting, Fennessy, Mauck*

### **ENVS 300 Geographic Information Science**

*Credit: .5 unit*

This course is for all students interested in learning about how geographic information science (GIS) is used to analyze geographic data, model spatial processes, and make informed decisions. Following a review of maps and cartographic principles, the course will shift its emphasis to the nature of computer-based geographic information and the ways in which information technologies are used to perform geographic analyses. Lectures will introduce fundamental

concepts such as scale and resolution, the nature of spatial data and the structure of GIS data and files, the construction of GIS queries, and GIS data attributes and modeling operators. A series of laboratory case studies will present real-world applications of GIS while offering students opportunities to apply the fundamental concepts discussed in lectures. The course will particularly benefit students who are looking to incorporate GIS into their research with Kenyon faculty members. Prerequisites: sophomore standing or above and permission of the instructor.

*Instructor: Holdener*

### **ENVS 461 Seminar in Environmental Studies**

*Credit: .5 unit*

The intention of this capstone seminar is to draw together and apply the concepts learned in earlier courses in the Environmental Studies Concentration. The focus of the course will be on case studies of natural-resource management, with specific topic areas to be determined. In this strongly interdisciplinary effort, we will explore ecological, economic, social, and legal issues that influence how people exploit natural resources, and whether that exploitation is sustainable. Students will be expected to develop and communicate their understanding of the complex and inseparable relationships of human well being, ecosystem services, and environmental management. Prerequisites: junior or senior standing and ENVS 112. Offered every spring.

### **ENVS 493 Individual Study**

*Credit: .25 unit-.5 unit*

Because the Environmental Studies Concentration has no faculty of its own, the nature of an individual study will necessarily vary dramatically depending on the home discipline of the faculty member guiding the course. Details regarding the expected number of contact hours per week, workload, and assessment will be left to the discretion of the faculty member guiding the individual study. There are no formal restrictions on who can pursue an individual study in ENVS. Individual studies are not intended to replace an elective course in fulfilling the requirements of the Environmental Studies Concentration.

#### **ADDITIONAL COURSES THAT MEET THE REQUIREMENTS FOR THIS CONCENTRATION OR MAJOR:**

ANTH 111: Introduction to Biological Anthropology  
 ANTH 320: Anthropology of Food  
 ANTH 324: Biocultural Adaptations  
 ANTH 333: Seeds, Settlements, and Standing Stones: The Neolithic in Western Asia and Europe  
 BIOL 228: Ecology  
 BIOL 229: Ecology Laboratory  
 BIOL 251: Marine Biology  
 BIOL 352: Aquatic Systems Biology  
 BIOL 353: Aquatic Systems Lab  
 CHEM 108: Solar Energy  
 CHEM 121: Introductory Chemistry  
 CHEM 122: Honors Introductory Chemistry  
 CHEM 231: Organic Chemistry I  
 CHEM 232: Organic Chemistry II  
 CHEM 233: Organic Chemistry Lab I  
 CHEM 234: Organic Chemistry Lab II

CHEM 341: Instrumental Analysis  
ECON 102: Principles of Macroeconomics  
ECON 336: Environmental Economics  
ECON 342: Economics of Regulation  
PHIL 110: Introduction to Ethics  
PHIL 115: Practical Issues in Ethics  
PHYS 108: Geology  
PSCI 361: Globalization  
PSCI 363: Global Environmental Politics  
PSCI 480: Science and Politics  
RLST 481: Religion and Nature  
SOCY 233: Sociology of Food

SOME RECENTLY OFFERED SPECIAL TOPICS  
Gender and Environmental Justice: Local and Global  
Perspectives