

**Appendix L**  
**Undergraduate Certificate**  
**Current and Proposed Changes**

**To:** College of Arts and Science Curriculum Committee

**FROM:** Michele Morrone and Nancy Manring, Environmental Studies

**SUBJECT:** Changes to Undergraduate Certificate in Environmental Studies

**DATE:** September 10, 2008

Environmental Studies programs have a tendency to center on awareness, identifying problems, and providing technical solutions. However, students also need to learn how to move beyond awareness and technical approaches to work toward practical, politically acceptable solutions. This last step involves interaction with the public and policy makers. Already a number of Environmental Studies students have worked directly with government officials in watershed groups, schools, and members of the public to solve environmental problems in the region. Many of these students have chosen careers where they remain in contact with the public and with policy makers. The problem solving perspective these students have gained is professionally advantageous and valued by public managers. We would like to see more Ohio University students step into environmental leadership roles as policy makers, educators, communicators, scientists, engineers, and community members. In order to help prepare them for these important and demanding positions, we are proposing the **Environmental Leadership Emphasis**. This emphasis combines disciplinary course work and an interdisciplinary, problem-solving experiential learning. The learning experience will necessitate that students move beyond *awareness* of problems into practical experience *solving* environmental problems.

In line with this reasoning, attached you will find the following proposals for changes to the Undergraduate Certificate in Environmental Studies:

- 1) Proposed changes to the curriculum presented as catalog changes; and
- 2) A new course proposal for ES 490.



## Current Version

The field of environmental studies encompasses the complex interactions between humans, other organisms, and the biophysical environment. The Environmental Studies Certificate Program is open to students in any major program within the University who want to gain knowledge and understanding about the interdisciplinary field of environmental studies. Completion of this program, which is the equivalent of a minor, results in the awarding of a certificate and is officially recognized on your transcript upon graduation.

You can earn a certificate in environmental studies by completing 32–35 hours of approved coursework selected from the courses outlined below. Many certificate courses currently satisfy both Tier and Arts and Sciences requirements. Further, courses taken as part of an Arts and Sciences major will also count toward fulfilling the certificate. Be advised that some courses require prerequisites, and plan accordingly. Students should take no more than three courses from any one department.

### Core Requirements (12-13 hours)

---

- - Complete GEOG 201 or GEOL 215
- [GEOG 201 - Environmental Geography](#) Credit Hours: 4
- or
- [GEOL 215 - Environmental Geology](#) Credit Hours: 4
- -
- [POLS 425 - Environmental and Natural Resource Politics and Policy](#) Credit Hours: 4

### Complete one of the following:

---

- [BIOS 220 - Conservation and Biodiversity](#) Credit Hours: 4
- [BIOS 275 - Ecology in the 21st Century](#) Credit Hours: 4
- [BIOS 375 - Animal Ecology](#) Credit Hours: 4
- [PBIO 209 - Plant Ecology](#)

### Quantitative Skills (4–5 hours)

---

Choose an approved course in statistics, such as

- [ECON 381 - Introduction to Economic Statistics and Econometrics](#) Credit Hours: 4

- [GEOG 271 - Introduction to Statistics in Geography](#) Credit Hours: 4
- [GEOG 471 - Quantitative Methods](#) Credit Hours: 4
- [GEOL 205 - Statistical Methods in Geology](#) Credit Hours: 4
- [IH 400 - Industrial Hygiene Sampling and Analysis](#) Credit Hours: 5
- [ISE 304 - Applied Engineering Statistics](#) Credit Hours: 3
- [MATH 250 - Introduction to Probability and Statistics I](#) Credit Hours: 4
- [MATH 450A - Theory of Statistics](#) Credit Hours: 4
- [PBIO 415 - Quantitative Methods in Plant Biology](#)
- [POLS 483 - Statistical Package for the Social Sciences](#) Credit Hours: 4
- [PSY 221 - Statistics for the Behavioral Sciences](#) Credit Hours: 5

## Natural Sciences (8–9 hours)

---

Complete the following:

- One chemistry course (any except CHEM 115)

And, one of the following:

- [BIOS 221 - Microbes and Humans](#) Credit Hours: 4
- [BIOS 376 - Field Ecology](#) Credit Hours: 4
- [BIOS 385 - Microbial Ecology](#) Credit Hours: 3
- [BIOS 429 - Marine Biology](#) Credit Hours: 5
- [BIOS 431 - Aquatic Biology](#) Credit Hours: 5
- [BIOS 481 - Animal Conservation Biology](#) Credit Hours: 4
- [C E 353 - Basics of Environmental Engineering](#) Credit Hours: 3
- [C E 452 - Water and Wastewater Analysis](#) Credit Hours: 3
- [EH 260 - Introduction to Environmental Health and Safety](#) Credit Hours: 4
- [EH 310 - Water Supply and Wastewater Environmental Health Practice](#) Credit Hours: 3
- [EH 312 - Solid and Hazardous Waste Management](#) Credit Hours: 4
- [EH 440 - Air Quality and Pollution Control](#) Credit Hours: 3
- [GEOG 302 - Meteorology](#) Credit Hours: 5
- [GEOG 315 - Landforms and Landscapes](#) Credit Hours: 5
- [GEOG 316 - Biogeography](#) Credit Hours: 4
- [GEOG 417 - Landscape Ecology](#) Credit Hours: 4
- [GEOL 231 - Water and Pollution](#) Credit Hours: 4
- [GEOL 330 - Principles of Geomorphology](#) Credit Hours: 5
- [GEOL 427 - Water Geochemistry](#) Credit Hours: 4
- [GEOL 432 - Origin and Classification of Soils](#) Credit Hours: 4
- [GEOL 480 - Principles of Hydrogeology](#) Credit Hours: 4
- [PBIO 426 - Physiological Plant Ecology](#)
- [PBIO 435 - Plant Population Biology](#) Credit Hours: 5
- [PBIO 436 - Plant Community Ecology](#)
- [PBIO 437 - Ecosystem Ecology](#)

## Social Sciences (8-9 hours)

---

Two courses in two different departments from the following:

- [ANTH 378 - Human Ecology](#) Credit Hours: 4
- [ECON 313 - Economics of the Environment](#) Credit Hours: 4
- [ECON 314 - Natural Resource Economics](#) Credit Hours: 4
- [EH 275 - Environmental and Occupational Health and Safety Regulations](#) Credit Hours: 4
- [GEOG 241 - Global Issues in Environmental Geography](#) Credit Hours: 4
- [GEOG 344 - Agricultural Ecosystems](#) Credit Hours: 4
- [GEOG 350 - Land Use Planning](#) Credit Hours: 4
- [GEOG 353 - Environmental Planning](#) Credit Hours: 4
- [GEOG 357 - Environmental Law](#) Credit Hours: 4
- [GEOG 358 - Environmental Hazards](#) Credit Hours: 4
- [GEOG 440 - Environmental Impact Analysis](#) Credit Hours: 4
- [GEOG 447 - Natural Resource Conservation](#) Credit Hours: 4
- [GEOG 456 - The City and the Environment](#) Credit Hours: 4
- [HIST 306 - American Environmental History](#) Credit Hours: 4
- [PHIL 335 - Environmental Ethics](#) Credit Hours: 4
- [POLS 426 - Politics of Contemporary Environmental Movement](#) Credit Hours: 4

## Proposed Change

The field of environmental studies encompasses the complex interactions between humans, other organisms, and the biophysical environment. The Environmental Studies Certificate Program is open to students in any major program within the University who want to gain knowledge and understanding about the interdisciplinary field of environmental studies. Completion of this program, which is the equivalent of a minor, results in the awarding of a certificate and is officially recognized on your transcript upon graduation.

You can earn a certificate in environmental studies by completing 32–35 hours of approved coursework selected from the courses outlined below. Many certificate courses currently satisfy both Tier and Arts and Sciences requirements. Further, courses taken as part of an Arts and Sciences major will also count toward fulfilling the certificate. Be advised that some courses require prerequisites, and plan accordingly. Students should take no more than three courses from any one department.

### Core Requirements (12-13 hours)

---

- GEOG 201 - Environmental Geography Credit Hours: 4
- or
- GEOL 215 - Environmental Geology Credit Hours: 4
- POLS 425 - Environmental and Natural Resource Politics and Policy Credit Hours: 4

### Complete one of the following:

---

- BIOS 220 - Conservation and Biodiversity Credit Hours: 4
- BIOS 275 - Ecology in the 21st Century Credit Hours: 4
- BIOS 375 - Animal Ecology Credit Hours: 5
- PBIO 209 - Plant Ecology Credit Hours: 4

### Natural Sciences (8-9 hours)

---

- One chemistry course (any except CHEM 115)

One of the following:

- BIOS 221 - Microbes and Humans Credit Hours: 4
- BIOS 376 - Field Ecology Credit Hours: 4

- BIOS 385 - Microbial Ecology Credit Hours: 3
- BIOS 429 - Invertebrate Biology Credit Hours: 5
- BIOS 431 - Aquatic Biology Credit Hours: 5
- BIOS 481 - Animal Conservation Biology Credit Hours: 4
- C E 353 - Basics of Environmental Engineering Credit Hours: 3
- C E 452 - Water and Wastewater Analysis Credit Hours: 3
- EH 260 - Introduction to Environmental Health and Safety Credit Hours: 4
- EH 310 - Water Supply and Wastewater Environmental Health Practice Credit Hours: 3
- EH 312 - Solid and Hazardous Waste Management Credit Hours: 4
- EH 440 - Air Quality and Pollution Control Credit Hours: 3
- GEOG 302 - Meteorology Credit Hours: 5
- GEOG 315 - Landforms and Landscapes Credit Hours: 5
- GEOG 316 - Biogeography Credit Hours: 4
- GEOG 417 - Landscape Ecology Credit Hours: 4
- GEOL 231 - Water and Pollution Credit Hours: 4
- GEOL 330 - Principles of Geomorphology Credit Hours: 5
- GEOL 427 - Water Geochemistry Credit Hours: 4
- GEOL 432 - Origin and Classification of Soils Credit Hours: 4
- GEOL 480 - Principles of Hydrogeology Credit Hours: 4
- PBIO 426 - Physiological Plant Ecology
- PBIO 435 - Plant Population Biology Credit Hours: 5
- PBIO 436 - Plant Community Ecology
- PBIO 437 - Ecosystem Ecology

## **Social Sciences (8 hours)**

---

Two courses in two different departments from the following:

- ANTH 378 - Human Ecology Credit Hours: 4
- ECON 313 - Economics of the Environment Credit Hours: 4
- ECON 314 - Natural Resource Economics Credit Hours: 4
- EH 275 - Environmental and Occupational Health and Safety Regulations Credit Hours: 4
- GEOG 241 - Global Issues in Environmental Geography Credit Hours: 4
- GEOG 344 - Agricultural Ecosystems Credit Hours: 4
- GEOG 350 - Land Use Planning Credit Hours: 4
- GEOG 353 - Environmental Planning Credit Hours: 4
- GEOG 357 - Environmental Law Credit Hours: 4
- GEOG 358 - Environmental Hazards Credit Hours: 4
- GEOG 440 - Environmental Impact Analysis Credit Hours: 4
- GEOG 447 - Natural Resource Conservation Credit Hours: 4
- GEOG 456 - The City and the Environment Credit Hours: 4
- HIST 306 - American Environmental History Credit Hours: 4
- PHIL 335 - Environmental Ethics Credit Hours: 4

- POLS 426 - Politics of Contemporary Environmental Movement Credit Hours: 4
- POLS 488 –Environmental and Public Policy Dispute Resolution Credit Hours: 4

## **Elective (4-5 hours)**

In addition to the Natural and Social Sciences requirements, students should select one elective course from either the Natural Sciences or Social Sciences categories. Students are encouraged to select an elective that does not correspond with their major.

In consultation with the certificate director, students who are in a major that does not require a quantitative course will be encouraged to take one of the following courses as an elective:

- ECON 381 - Introduction to Economic Statistics and Econometrics Credit Hours: 4
- GEOG 271 - Introduction to Statistics in Geography Credit Hours: 4
- GEOG 471 - Quantitative Methods Credit Hours: 4
- GEOL 205 - Statistical Methods in Geology Credit Hours: 4
- IH 400 - Industrial Hygiene Sampling and Analysis Credit Hours: 5
- ISE 304 - Applied Engineering Statistics Credit Hours: 3
- MATH 250 - Introduction to Probability and Statistics I Credit Hours: 4
- MATH 450A - Theory of Statistics Credit Hours: 4
- PBIO 415 - Quantitative Methods in Plant Biology
- POLS 483 - Statistical Package for the Social Sciences Credit Hours: 4
- PSY 221 - Statistics for the Behavioral Sciences Credit Hours: 5

## **Leadership Emphasis**

Students can choose to pursue the leadership emphasis as a component of the certificate program. The purpose of this emphasis is to provide the student with experiential learning that will lead to solving a real-world environmental problem. Students who choose this emphasis will be required to take the following courses:

- 1) Environmental Studies Leadership Experience (4 credits) of ES 490\* (instead of the elective); and
- 2) Environmental and Public Policy Dispute Resolution (POLS 488)

---

\*This course is being submitted simultaneously with these catalog changes.