

# ALL COURSES

## ENVIRONMENTAL SCIENCE

### ENVS 1004: Principles of Environmental Science

Cross-listed: BIOL 1004 Principles of Environmental Science and PHSC 1004 Principles of Environmental Science

This course is designed to bring the student to a basic but informed awareness of and responsible behavior toward our environment and the role of the human race therein. The content will include a study of the philosophical and scientific basis for the study of ecosystems and the environment, the nature of ecosystems, the techniques used to study the environment, the origin and development of current environmental problems, the interdisciplinary nature of environmental studies, the processes of critical thinking and problem solving, and the moral and ethical implications of environmentally-mandated decisions.

Lecture three hours, laboratory three hours. \$40 laboratory fee.

### ENVS 3043: Conservation

Cross-listed: BIOL 3043 Conservation

Prerequisite: BIOL/ENVS/PHSC 1004 Principles of Environmental Science.

A study of natural resources, their utilization in a technical society, and factors leading to their depletion.

### ENVS 3111: Environmental Seminar

Cross-listed: BIOS 3111, CHEM 3111 Environmental Seminar, and GEOL 3111 Environmental Seminar

A seminar for students pursuing the environmental option of biology, chemistry, or geology and other students interested in environmental sciences.

### ENVS 4112: Environmental Science Internship

Prerequisite: Consent of biology program director.

A supervised, practical experience providing ENVS majors with a hands-on, professional experience related to their career interests. Approximately 200 clock hours, a proposal, a log book, and a written and oral report are required.

### ENVS 4114: Environmental Science Internship

Prerequisite: Consent of biology program director.

A supervised, practical experience providing ENVS majors with a hands-on, professional experience related to their career interests. Approximately 400 clock hours, a proposal, a log book, and a written and oral report are required.

### ENVS 4124: Biological Assessment of Water Quality

Cross-listed: BIOL 4124 Biological Assessment of Water Quality

Offered: Spring

Prerequisites: BIOL/ENVS/PHSC 1004 Principles of Environmental Science, BIOL/FW 3114 Principles of Ecology, and three semesters of chemistry.

This course is an in-depth study of assessment of water quality by analyzing biological and chemical data.

This course may include topics and case studies from the following list:

Compare and contrast biological and chemical techniques for assessing water quality

Physical and chemical properties of water,

Connecting flows and water quality

Nutrient pollution,

Point and non-point sources

Effects of petroleum pollution from extraction, transportation, refining, and combustion on biological systems

SOPs, industry, and government standard practices and procedures for analyzing water quality

Species richness, species evenness, and rank abundance curves

Techniques from microbiology

Plants as assessment tools

Cladocerans and other zooplankton in laboratory or field

Macro invertebrates as indicators

Fighting Back Against Invasive Plants

Watch-dogging Wetlands Mitigation

Tackling the Dead Zone & Restoring the Mississippi

Volunteer monitoring helps identify problems and improve clean-up

Lecture 3 hours, laboratory 3 hours. This course includes several required field trips. \$40 laboratory fee.

### ENVS 4133: Environmental Policy

Offered: Spring

Prerequisites: BIOL/ENVS/PHSC 1004 Principles of Environmental Science and BIOL/ENVS 3043 Conservation

This course is an in-depth study of environmental policy and law, including federal and state regulations, federal and state agencies, policies, enforcement, historic legal actions, and important procedures for compliance.

This course may include topics and case studies from the following list:

Introduction to the Clean Water Act Water Quality Standards

Pollution Discharge Permits  
Storm water Pollution Discharge Permits Identifying Impaired Waters  
Restoring Impaired Waters  
Water Quality Certification Dredge & Fill Permits  
Non-point Source Control State Revolving Funds Enforcement  
Other Laws  
Phosphorus Pollution Controls  
Kentucky Waterways Alliance antidegradation case  
Using the Clean Water Act to Restore Flows: Fay Creek  
Watershed-based approach to storm water permits  
Creative ways to use Section 319 funds  
Hard infrastructure dollars pay for stream restoration  
An industrial success in Oregon  
Pursuing alternatives to wetland destruction  
Using 401 to protect stream flow in the Dosewallips River

**ENVS 4881: Advanced Topics in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

This course offers advanced instruction in an area of biological sciences that is not otherwise covered in the curriculum. The focus of the course will vary from offering to offering, thus the course may be taken more than once.

**ENVS 4882: Advanced Topics in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

This course offers advanced instruction in an area of biological sciences that is not otherwise covered in the curriculum. The focus of the course will vary from offering to offering, thus the course may be taken more than once.

**ENVS 4883: Advanced Topics in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

This course offers advanced instruction in an area of biological sciences that is not otherwise covered in the curriculum. The focus of the course will vary from offering to offering, thus the course may be taken more than once.

**ENVS 4884: Advanced Topics in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

This course offers advanced instruction in an area of biological sciences that is not otherwise covered in the curriculum. The focus of the course will vary from offering to offering, thus the course may be taken more than once.

**ENVS 4951: Undergraduate Research in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

Advanced students carry out independent research activity relating to a significant problem in a major field of study and supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.

**ENVS 4952: Undergraduate Research in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

Advanced students carry out independent research activity relating to a significant problem in a major field of study and supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.

**ENVS 4953: Undergraduate Research in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

Advanced students carry out independent research activity relating to a significant problem in a major field of study and supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.

**ENVS 4954: Undergraduate Research in Environmental Science**

Prerequisites: an upper level science course and consent of the instructor.

Advanced students carry out independent research activity relating to a significant problem in a major field of study and supervised by faculty member. Formal report and presentation required. One to four credits depending on problem selected and effort made. \$40 laboratory fee.