

# ENVIRONMENTAL STUDIES

---

## **DIRECTOR**

Andre Droxler

## **ASSOCIATE DIRECTOR**

Richard Johnson

## **PROFESSORS**

Walter Chapman

Arthur A. Few

Stephen Klineberg

Neal Lane

Elizabeth Long

Peter Mieszkowski

Ronald J. Parry

Evan Siemann

Rick K. Wilson

Gordon G. Wittenberg

Kyriacos Zygorakis

## **PROFESSORS EMERITI**

Paul Harcombe

Ronald Sass

## **ASSOCIATE PROFESSOR**

Melissa J. Marschall

## **ASSISTANT PROFESSORS**

Daniel Cohan

Brandon Dugan

Caroline Masiello

Jennifer Rudgers

## **LECTURERS**

James Blackburn

William Dawson

Winifred Hamilton

Karoline Mortensen

Donald Ostdiek

Lisa Slappey

The Environmental Studies Program offers several interdisciplinary courses for students interested in broadening their understanding of environmental issues. These courses often are team-taught by faculty from various areas of study.

Students wishing to major in an environmental program have three options: environmental science (see below), environmental engineering sciences (see civil and environmental engineering), or environmental policy (see policy studies). In addition, chemical and biomolecular engineering majors may create a focus area in environmental engineering (see chemical and biomolecular engineering) and earth science majors may follow an environmental earth science track (see earth science).

Students seeking advice regarding environmental programs may contact Andre Droxler ([andre@rice.edu](mailto:andre@rice.edu)), or the coordinator of the Center for the Study of Environment and Society ([cses@rice.edu](mailto:cses@rice.edu)).

## **DEGREE REQUIREMENTS FOR BA IN ENVIRONMENTAL SCIENCE**

Environmental science is an interdisciplinary program that addresses environmental issues in the context of what we know about earth, ecology, and society. In addition to its science core, the major also seeks to provide students with some appreciation of social, cultural, and policy dimensions of environmental issues, as well as exposure to the technologies of pollution control. The double major is designed to accommodate:

- Students wishing to obtain a solid preparation for later graduate study in environmental science or other careers as environmental professionals (e.g., environmental economics or environmental law)
- Students pursuing other careers (e.g., historians, lawyers, mechanical engineers, chemists) who hope to contribute to solutions to one of the major global issues of the 21st century.

Students may take environmental science *only as a second major*. The 67-semester-hour (minimum) double major may be taken in conjunction with any stand-alone major offered in any school of the university.

The key components of the double major include:

- Foundation course work in mathematics, physics, chemistry, and biology.
- A set of five undergraduate core courses, required of all double majors, that acquaint undergraduates with a range of environmental problems encountered by scientists, engineers, managers, and policy makers. Core courses stress the components of the global environment and their interactions.
- 24 semester hours of environmental electives from four categories: 1) social sciences and economics, 2) humanities and architecture, 3) natural sciences, and 4) engineering. Students may petition to have electives, in addition to those currently listed, apply toward the double major.

Major tracking forms are available in the Center for the Study of Environment and Society (CSES) office for declared environmental science majors.

Specific course requirements for a double major (BA) in environmental science include:

### **General Prerequisites**

BIOS 201 *Introductory Biology*

BIOS 202 *Introductory Biology*

CHEM 121 or 151 *General Chemistry with Laboratory*

CHEM 122 or 152 *General Chemistry with Laboratory*

MATH 101 or 111 *Single Variable Calculus I*

MATH 102 or 112 *Single Variable Calculus II*

PHYS 101 or 125 or 111 *Mechanics*

PHYS 102 or 126 or 112 *Electricity and Magnetism*

### **Core Courses**

BIOS 325 *Ecology*

ESCI 321 *Earth System Evolution and Cycles*

### **One of the following two courses**

CEVE 411 *Atmospheric Processes*

ESCI 414 *Physics and Chemistry of the Atmosphere*

### **Two of the following three courses**

CEVE 401 *Introduction to Environmental Chemistry*

CEVE 412 *Hydrology and Watershed Analysis*

ESCI 454/CEVE 453 *Geographic Information Science*

### **Advanced Electives (24 hours; at least six semester hours from each category)**

#### **Category A—Social Sciences and Economics**

CEVE 306 *Global Environmental Law and Sustainable Development*

CEVE 406/ENST 406 *Environmental Law*

ECON 480/ENST 480 *Environmental Economics*

ENST 302/SOCI 304 *Environmental Issues: Rice into the Future*

ENST 312 *Environmental Battles in the 21st Century: Houston as a Microcosm*

POLI 317 *The Congress*

POLI 318 *The Presidency*

POLI 331 *Environmental Politics and Policy*

POLI 332 *Urban Politics*

POLI 334 *American Political Parties*

SOCI 313 *Demography*

SOCI 367/ENST 367 *Environmental Sociology*

#### **Category B—Humanities and Architecture**

ARCH 313/ENST 313 *Sustainable Architecture*

ENGL 367 *American Ecofeminism*

ENGL 368/ENST 368 *Literature and the Environment*

HIST 376 *Natural Disasters in the Caribbean*

#### **Category C—Natural Sciences**

ANTH 468 *Climate Variability and Human Response*

BIOS 316 *Lab Module in Ecology*

BIOS 321 *Animal Behavior*

BIOS 323/ENST 323 *Conservation Biology*

BIOS 334 *Evolution*

BIOS 336 *Plant Diversity*

CHEM 211 *Organic Chemistry*

CHEM 395 *Advanced Module in Green Chemistry*

ESCI 323 *Earth Structure and Deformation*  
 ESCI 340/BIOS 340/ENST 340 *Global Biogeochemical Cycles*  
 ESCI 421 *Paleoceanography*  
 ESCI 430 *Trace Element and Isotope Geochemistry for Earth and Environmental Sciences*  
 ESCI 442 *Exploration Geophysics*  
 ESCI 450/CEVE 450 *Remote Sensing*  
 ESCI 454/CEVE 453 *Geographic Information Science*

**Category D—Engineering**

BIOS 338 *Design and Analysis of Biological Experiments*  
 CEVE 201/HEAL 201 *Urban and Environmental Systems*  
 CEVE 203 *Principles of Environmental Engineering*  
 CEVE 315 *Sustainable Technologies for Developing Countries*

CEVE 401 *Chemistry for Environmental Engineering and Science*  
 CEVE 411 *Atmospheric Processes*  
 CEVE 412 *Hydrology and Watershed Analysis*  
 CEVE 434 *Fate and Transport of Contaminants in the Environment*  
 CEVE 451 *Analysis of Environmental Data*  
 CEVE 470 *Basic Soil Mechanics*  
 CEVE 490 *Special Study and Research*  
 ENST 307/CEVE 307/ESCI 307 *Energy and the Environment*  
 ENST 281/CHBE 281 *Engineering Sustainable Communities*  
 STAT 300 *Model Building*  
 STAT 305 *Introduction to Statistics for the Biosciences*  
 STAT 310/ECON 382 *Probability and Statistics*  
 PSYC 339 *Statistical Methods—Psychology*

**See ENST in the Courses of Instruction section.**