

# ENVIRONMENTAL SCIENCE (B.S.)

## 2019-2020 Tip Sheet

The B.S. degree in environmental science is focused on developing scientific and quantitative skills which students can use to approach environmental problems at the most fundamental of levels. The major is designed for those interested in careers in environmental consulting, testing, and hands-on scientific analysis of environmental problems.

### Recommendations for first year students:

1. **In the fall term take ES 207/207L or ES 117.** (*a 4 or 5 on the AP Environmental Science exam will exempt you from this requirement*)
2. **Consider taking Chemistry (one year required) or Math or pursuing one of the ES or affiliated courses listed below.**
3. **In your first semester, meet with an ES faculty member to chat about your interests.** (*ES faculty: Renee Godard (chair), Morgan Wilson, Liz Gleim, Pablo Hernandez, Brian Gentry, Mary Jane Carmichael*)

## ES COURSES OFFERED 2019-2020

### Fall

#### Core Courses

ES 117: Intro to Env't Science  
Econ 157: Microeconomics  
ES 207/207L: Ecology + lab  
ES 357/357L: Conservation Biology  
ES 470: Senior Seminar in Env't Studies

#### Required Science/Math Courses

Chem 101/101L: General Chemistry I  
Chem 105/105L: Principles of Chemistry  
Phys 151/151L or 201/201L: Physics  
Psy 208: Research Statistics  
Stat 251: Statistical Methods I

#### Elective Science Courses

ES 364/364L: Biogeochemistry  
Chem 221/221L: Organic Chemistry I  
Biol 236/236L: Cell and Molecular Biology

#### Additional ES Courses

ES 311: Environmental History of Ancient Mediterranean

### Spring

#### Core Courses

ES 117: Intro to Env't Science  
Econ 157: Microeconomics  
ES 250: Environmental Policy of US  
(*equivalent to ES 234*)

#### Required Science/Math Courses

Chem 102/102L: General Chemistry II  
Phy 152/152L or 202/202L: Physics  
Psy 208: Research Statistics  
Stat 324: Data Wrangling with R (2 cr)

#### Elective Science Courses

Chem 214/214L: Analytical Chemistry  
Chem 222/222L: Organic Chemistry II  
ES 241: Geology and Earth History  
ES 337/337L: Ornithology  
Biol 312/312L: Microbiology  
Biol 323/323L: Animal Behavior

#### Additional ES Courses

ES 210: World Geography  
ES 250: Sustainable Architecture  
ES 305: Cultural Geography and Landscape Study

## REQUIREMENTS FOR A B.S. MAJOR IN ENVIRONMENTAL SCIENCE:

### CORE COURSES:

- ES 117: Environmental Science (4)
- Econ 157: Microeconomics (4)
- ES 207: Ecology (4) + Laboratory (2)
- ES 234: Environmental Politics and Policy (4) **or** SFS course: Policy and Socioeconomic Values
- ES 357: Conservation Biology (4) **or** SFS Principles of Resource Management
- ES 470: Senior Seminar in Environmental Studies (4)

### ADDITIONAL SCIENCE/MATH COURSES (9)

- Chem 101/101L & 102/102L (12) **or** Chem 105/105L (6)
- PHYS 151/151L & 152/152L or 201/201L & 202/202L (12)
- PSY 208: Research Statistics (4) **or** Stat 251: Statistical Methods (4)
- STAT 250: Data Science with R (2)
- 3 additional science courses from the following: Bio 241/241L: Plant Biology (6); Bio 236/236L: Cell and Molecular Biology (6); Bio 312/312L Microbiology (6); Bio 313/313L Invertebrate Zoology (6); Bio 323/323L Animal Behavior (6); ES/Bio 337: Ornithology (4); Chem 214/214L: Analytical Chemistry (6); Chem 221/221L: Organic Chemistry I (6); Chem 222/222L Organic Chemistry II (6); ES/Phys 241: Earth History and Geology (4); School for Field Studies courses: SFS Directed Research (4); SFS Regional Ecology (4); SFS Resource Management (4); one semester of ES 390/480

### ADDITIONAL ENVIRONMENTAL STUDIES COURSE (1)

- 1 course from the following: ES 182: Environmental Philosophy (4); ES 210: World Geography (4); ES 219: Food, Culture and Social Justice (4); ES 220: Globalization and Local Response (4); ES 230: Economics and the Environment (4); ES 304: Geography of Global Environment (4); ES 305: Cultural Geography and Landscape Studies (4); SFS Policy and Socioeconomic Values (4)

### EXPERIENTIAL COMPONENT

- All students must complete an experiential component, which consists of a related internship, service project, or completion of the Wilderness Leadership Experience or the Short Term Trip: Caribbean Ecology and Culture. Here are a sampling of internships our students have obtained – Chesapeake Bay Foundation, VA; Canaveral National Seashore, FL; Mountain Castle Soil and Water Division, Roanoke VA; Blue Ridge Land Conservancy, Roanoke, VA; Roanoke Clean Valley Council, Roanoke, VA; The Nature Conservancy, Charlottesville, VA; VMI Laboratories, Lexington, VA; Sierra Club - Cumberland Chapter, KY; Kentucky Division of Compliance Assistance, KY; George Washington National Forest Service, Roanoke, VA ; Southern Waterview Development, FL; National Zoo, Washington, D.C. We encourage you to pursue internship opportunities early and frequently during your academic career!

### *We encourage you to Study abroad!*

- Affiliate program with the School for Field Studies (SFS): research-based experience in ecology, environmental issues, and sustainable development in environmentally sensitive areas around the world – **4 courses transfer directly to ES major**. Field station locations include: Costa Rica (sustainable development studies), Kenya (wildlife ecology and management studies), Turks and Caicos (marine resources studies), Panama (tropical island biodiversity and conservation studies), Australia (tropical rainforest management studies), Peru (biodiversity and development in the Amazon), and Cambodia (the living Mekong). Contact Renee Godard or [www.fieldstudies.org/](http://www.fieldstudies.org/) for more information.
- Affiliate program with Limerick University: traditional university setting often providing 1-2 ES related courses for our majors
- Caribbean Ecology J Term Research course: research based J-term travel course to Caribbean.