ENVIRONMENTAL SCIENCE BACHELOR OF SCIENCE: AQUATIC AND EARTH SCIENCE TRACK

Program Overview

This interdisciplinary science degree prepares students in a liberal arts tradition to understand connections between human beings and their effects on the Earth's environment. Drake environmental science students are grounded in the natural sciences disciplines while also acquiring the ability to synthesize information across disciplines. Students develop technical and quantitative skills including laboratory and field methods, statistical analysis and the implementation of geographic information systems (GIS). Courses in the social sciences such as economics, politics, policy and ethics provide an important link to the human element associated with environmental issues. Graduates of the program will be well prepared to undertake graduate study in diverse fields of environmental sciences, as well as to work in governmental and nongovernmental capacities on environmental issues.

Field work is a key component of this degree, featured in biology, geology and environmental classes. Iowa's central location in the nation allows students to experience a diversity of ecosystems and human communities during frequently offered weekend and summer field trips. The program also connects students with ongoing environmental projects (for example an 8,000-acre prairie restoration project including bison and elk at the Neal Smith National Wildlife Refuge, 20 miles east of campus), with offerings at Iowa Lakeside Laboratory in Milford, Iowa (a biological field station), and with semester-long marine science experiences at the University of Southern Mississippi's Gulf Coast Research Laboratory in Ocean Springs, Mississippi.

Drake's environmental science major is distinguished by its strong focus on interdisciplinary study, emphasis on field experiences, opportunities for research and independent study, and service learning approach in the Senior Capstone experience.

B.S. Degree Requirements

The B.S. degree program is designed to provide significant experience in research. Students will become collaborators with faculty and contribute to all aspects of a research project from proposal and hypothesis formation to data analysis, interpretation and presentation. The research typically occurs at Drake University with Drake faculty, but it could also be completed during an off-campus experience with a non-Drake adviser (e.g., study abroad, local workplaces). Off-campus research still requires an ENS faculty adviser (through enrollment in ENSS 197 ENVIRONMENTAL RESEARCH.

Additional requirements for the B.S. degree:

- Collaboration with a faculty advisor in a significant research project (minimum of 2 semesters)
- Research proposal submitted to the ENS program and approved before your senior year
- BIO 140 BIOLOGY RESEARCH AND STATISTICAL METHODS, or its advisor-approved equivalent
- A minimum of 2 credits of ENSS 197 ENVIRONMENTAL RESEARCH
- Oral presentation of the research to ENS faculty and students
- Research paper and a copy of the presentation submitted to the ENS program

Students planning to complete a B.S. in ENS should obtain a copy of the full description of the B.S. requirements from their advisor or the program director by their sophomore year.

At least 25 credits in this major will include courses not counted towards another major or minor.

Environmental Science Bachelor of Science: Aquatic and Earth Science Track

Code	Title	Hours
Core Curriculum		
ENSS 035	ONE EARTH: GLOBAL ENVIRONMENTAL SCIENCE	3
ENSS 036	ONE EARTH LABORATORY	1
ENSS 037	ENVIRONMENTAL CASE ANALYSIS	3
ENSS 041 & ENSS 042	PRINCIPLES OF GEOLOGY and PRINCIPLES OF GEOLOGY LAB	4
ENSS 065	GEOGRAPHIC INFORMATION SYSTEMS	3
ENSS 1XX	GLOBAL BIOGEOCHEMICAL CYCLES	3-4
ENSS 157	ENVIRONMENTAL JUSTICE	3
Introduction to Physical Science		
Select one of the following sequences:		8
CHEM 001 & CHEM 002 & CHEM 003 & CHEM 004	GENERAL CHEMISTRY I and GENERAL CHEMISTRY II and GENERAL CHEMISTRY I LAB and GENERAL CHEMISTRY II LAB	
PHY 001 & PHY 002	INTRODUCTION TO PHYSICS I and INTRODUCTION TO PHYSICS II (with lab)	
PHY 011 & PHY 012	GENERAL PHYSICS I and GENERAL PHYSICS II (with lab)	
Outcome Areas		
Interdisciplinary Science:		
Select two courses from the following:		6-8
ENSS 054	ENVIRONMENTAL COMMUNICATION	
ENSS 111	INTERNATIONAL ENVIRONMENT SEMINAR	
ENSS 125	CONSERVATION BIOLOGY	
ENSS 127	ENDANGERED SPECIES CONSERVATION	
ENSS 135	GLOBAL CLIMATE CHANGE: THE SCIENCE AND POLICY OF GLOBAL WARMING	
ENSS 138	WATER RESOURCES AND POLICY	
ENSS 150	ADVANCED TOPICS IN ENVIRONMENTAL SCIENCE (with advisor approval)	
Quantitative Analysis:		
Select two courses from the following:		6-8
BIO 140	BIOLOGY RESEARCH AND STATISTICAL METHODS	
CHEM 081	ANALYTICAL METHODS	
ENSS 150	ADVANCED TOPICS IN ENVIRONMENTAL SCIENCE (with advisor approval)	
ENSS 162	HYDROLOGY	
ENSS 168	DYNAMIC ENVIRONMENTAL MODELING	
MATH 050	CALCULUS I (or higher)	
PHY 025	(or higher)	

Physical Science:		
Select two courses from the following:		6-8
CHEM 081	ANALYTICAL METHODS	
CHEM 097 & CHEM 098	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY I LAB	
ENSS 135	GLOBAL CLIMATE CHANGE: THE SCIENCE AND POLICY OF GLOBAL WARMING	
ENSS 150	ADVANCED TOPICS IN ENVIRONMENTAL SCIENCE (with advisor approval)	
ENSS 162	HYDROLOGY (or higher)	
Systems Science:		
Select two courses from the following:		6-8
BIO 117	ECOLOGY	
BIO 120	ECOSYSTEM ECOLOGY	
ENSS 111	INTERNATIONAL ENVIRONMENT SEMINAR	
ENSS 119	REGIONAL ECOLOGY	
ENSS 125	CONSERVATION BIOLOGY	
ENSS 150	ADVANCED TOPICS IN ENVIRONMENTAL SCIENCE (with advsior approval)	
ENSS 168	DYNAMIC ENVIRONMENTAL MODELING	
Professional Skills:		
Select two courses from the following:		6-8
BIO 140	BIOLOGY RESEARCH AND STATISTICAL METHODS	
CHEM 081	ANALYTICAL METHODS	
CHEM 097 & CHEM 098	ORGANIC CHEMISTRY I and ORGANIC CHEMISTRY I LAB (or higher)	
ENSS 101	RESTORATION ECOLOGY PRACTICUM	
ENSS 115	ENVIRONMENTAL FIELD COURSE	
ENSS 150	ADVANCED TOPICS IN ENVIRONMENTAL SCIENCE (with advisor approval)	
ENSS 162	HYDROLOGY	
ENSS 165	APPLICATIONS OF GEOGRAPHIC INFORMATION SYSTEMS	
ENSS 168	DYNAMIC ENVIRONMENTAL MODELING	
ENSS 196	ENVIRONMENTAL INTERNSHIP	
Capstone		
ENSS 191	ENVIRONMENTAL SCIENCE AND SUSTAINABILITY PRACTICUM	3

In addition to programmatic requirements, students are responsible for satisfying all requirements of the Drake Curriculum (https://catalog.drake.edu/undergraduate/academic-information/drake-curriculum/), including Areas of Inquiry (AOI)

Student must also satisfy university graduation requirements (https://catalog.drake.edu/undergraduate/academic-information/graduation-requirements/) for all undergraduate students..