

# Undergraduate Program in **ENVIRONMENTAL ENGINEERING**

## **Environmental Engineers Shape the World**

Environmental engineers work at the interface of society and the environment, striving to protect both human and ecosystem health. We help make water safe to drink and air clean to breathe, restore water quality throughout the world, and lead sustainability efforts.

Today, environmental engineers face issues that are changing the world. With their unique combination of environmental science and engineering, environmental engineers are the linchpins in developing solutions to global climate change and alternative energy sources. From preventing waterborne diseases in the most remote village to protecting air quality at home, environmental engineers defend the global public health and ecosystem viability.

## **Careers for UB CSEE Grads**

According to the U.S. Bureau of Labor Statistics, employment for environmental engineers is projected to increase by 18% through 2026. Graduates can choose from a broad spectrum of opportunities in industry, governmental agencies, private consulting firms, and construction companies, as well as in research and development. Many graduates return to school to pursue advanced degrees. A few go on to complete their PhD and obtain positions in academia.



## **Curriculum Overview**

The BS degree in Environmental Engineering is accredited by the Engineering Commission of ABET (abet.org) and prepares students for graduate study and/or professional practice.

### [ FRESHMAN-SOPHOMORE ]

During the first two years of study, the environmental engineering curriculum provides for the development of fundamental knowledge and skills in the basic sciences (chemistry and physics) and applied sciences (environmental microbiology and environmental chemistry), mathematics through differential equations, and basic engineering (engineering principles, statics and mechanics, and CAD). Introduction to environmental engineering and sustainability are included early in the curriculum, in the fall of the sophomore year. These courses give a solid foundation in problem solving and analytical thinking, which are essential for environmental engineering students.

### [ JUNIOR ]

In the junior year, this development is supplemented by courses in civil engineering (fluid and soil mechanics, hydraulics, and statistics), ecological engineering,

### **Facts About CSEE@UB**

- Ladder faculty: 35
- Typical CSEE class size: 30-120
- 35,000 square feet of teaching and research labs
- Over \$2 million in annual research expenditures
- National average starting salary: **\$54,000**
- Over 3,500 alumni worldwide

### **Degrees offered:**

- BS in Environmental Engineering
- BS in Civil Engineering
- A 5-year combined BS Civil Engineering/MBA
- MS in Environmental Engineering
- MS in Civil Engineering
- PhD in Civil Engineering
- PhD in Environmental Engineering

an applied biological science course (ecology), and lab courses where hands-on laboratories build practical skills from the classroom instruction.

### [ SENIOR ]

During the senior year, students complete a sequence of advanced courses: hydrologic and groundwater engineering, treatment process engineering, and a departmental elective. Professional practice issues are covered in the fall semester, followed by capstone design in the spring semester. An earth science elective and two technical electives are included as well. Students may select technical electives from engineering and a wide range of supporting programs. Most students take the Fundamentals of Engineering (FE) exam in spring of their senior year.

## **Did You Know?**

You can get paid to go to graduate school. Many of our graduates choose to continue their studies at UB or attend other top tier universities, such as MIT, Purdue, Carnegie Mellon, UC Berkeley, UT Austin and Texas A&M. Top graduate students at UB may receive tuition scholarships and a stipend to support their studies.

## Learning by Experience

The School of Engineering and Applied Sciences places significant emphasis on real-world experiences, in an effort to further students' understanding of their options on their post-UB careers. Experiential learning initiatives include internships, engineering intramurals, job shadowing, senior capstone design projects, undergraduate research, and study abroad courses.



## Workforce Ready



**Madeleine Dewey** is a recent graduate in the BS environmental engineering program. She was involved with numerous projects on and off campus, and served as president of the student chapter of Engineers for a Sustainable World, an Education and Leadership Fellow in Sustainability, and Western New York Prosperity Fellow. *"The environmental engineering program at UB is small enough where students can develop close relationships with their professors and peers,"* says Dewey. *"From organizing key sustainability initiatives on campus, to leading a club, to mentoring first-year students, to participating in a study abroad trip during my final winter session, I can say with certainty that when I graduate in May, I feel ready to tackle life's next challenges. Thank you, CSEE!"*



**Isabel Hall**, a recent environment engineering graduate, discovered environmental engineering after arriving at UB. In addition to coursework, she runs a summer science program for local youth. Hall conducted undergraduate research on menstrual health maintenance in low-resource regions. *"Research under faculty mentorship has allowed me to explore how environmental engineering can bring social change to the developing world, and inspired me to create change in my local community,"* says Hall. *"The CSEE department encourages me to pursue my unique interests through departmental research, a tailored curriculum, and internship opportunities."*

## Student Clubs and Activities

Our students are engaged in a variety of campus-wide activities and organizations. Some of the more popular clubs for environmental engineering students include the student chapter of Engineers for a Sustainable World, and the student chapter of the American Society of Civil Engineers. Involvement in these clubs enriches the academic experience and provides students with strong leadership opportunities, along with some great memories.



To apply, please visit [admissions.buffalo.edu](https://admissions.buffalo.edu)

## World-Class Faculty



Faced with increased eutrophication of earth's waterways and variability in renewable freshwater resources,

there is an unprecedented need to reduce our impact on the aquatic environment. Assistant Professor **Ian Bradley** focuses on sustainable ways to treat our water and wastewater using natural microbial organisms like microalgae. Bradley's laboratory looks at how we can use these organisms to recover nutrients from waste streams, and generate resources such as fertilizer and bioenergy. By using sustainable biological processes, this work could transform resource consuming technologies into resource producers that generate materials and energy while keeping our waterways clean.



## Successful Alumni

**Lisa Derrigan**, PE (BS 1991, MS 1993) is a senior project engineer at GHD, an international

professional services company. GHD provides engineering architecture, environmental and construction services to private and public clients throughout the markets of water, energy and resources, environment, property and buildings and transportation.

## CONTACT INFO

**James N. Jensen**  
Director of Undergraduate  
Studies, Professor  
716.645.4007  
jjensen@buffalo.edu

**Éva McGovern**  
Undergraduate Academic  
Coordinator  
716.645.4352  
cseeug@buffalo.edu