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, air clean to breathe, and restore water quality in the Great Lakes and throughout the world.

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 12% through 2024. 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.

Facts About CSEE@UB

- Full-time faculty: 30
- Typical CSEE class size: 30-120
- 35,000 square feet of teaching and research labs
- $5.5 million in annual research expenditures
- National average starting salary: **$56,000**
- Over 3,500 alumni worldwide

Degrees offered:

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

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 is 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, statistics, and surveying), program-specific environmental engineering courses (ecological engineering and sustainability), an applied biological science course (ecology), and two 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: hazardous and solid waste management, hydrologic and groundwater engineering, and treatment process engineering. 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 range of supporting programs.

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 receive tuition scholarships and a stipend to support their studies.

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School of Engineering and Applied Sciences

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Learning by Experience

The School of Engineering and Applied Sciences places significant emphasis on real-world experience. Experiential learning initiatives include:

- Internships
- Engineering Intramurals
- Job Shadowing
- Senior Capstone Design Projects and Design Expo
- Undergraduate Research

Student Excellence

Matthew Falcone, a junior double majoring in environmental engineering and civil engineering, originally choose UB because it promised an excellent education at an affordable price. Now he says he couldn't imagine being anywhere else. *"The opportunities available here for students are astounding: if you have an idea that you want to pursue, someone will be willing to help you make it a reality,"* says Falcone. Under the mentorship of CSEE Professor James Jensen, Falcone participated in undergraduate research that aimed to develop the most efficient parabolic solar trough design that can disinfect water in developing countries and during emergency conditions. Last February, he was invited to present his research at the biannual SUNY Undergraduate Student Research and Creative Activities Forum.

Upon completion of the BS environmental engineering program, **Julie Powers** is planning to attend graduate school in environmental engineering with a focus on water resources engineering and public health. She says the BS program's challenging classes have really prepared her, yet the department's helpful and friendly faculty and classmates have been there to offer support along the way. Outside of the classroom, she participates in a wide range of science outreach and tutoring programs to K-12 students. Powers was awarded a UB Presidential Scholarship, which covers full tuition, room and board for four years of undergraduate study. *"I would really encourage prospective students to look into the merit-based scholarships that UB offers and apply early,"* she said. *"There are a lot of 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**

World-Class Faculty

The world's rapidly growing population presents challenges to the intricate relationship of global food demand and the consumption of two major resources: energy and water. Assistant Professor **Nirupam Aich** seeks to address the increasing need to better manage the food-energy-water nexus. His laboratory for Environmental Nanotechnology and Sustainability takes a responsible and innovative nanoscale material design approach to address issues with energy costs and renewable energy resources, as well as developing newer water treatment techniques to help their reuse and meet the demand for safe water.

Successful Alumni

Cassy Edwards (BS, 2014) is an Associate Engineer of Environmental and Clean Air Compliance at National Fuel. Her main responsibilities include air permitting and continual compliance for natural gas compressor stations. Through her work with National Fuel, she has gained experience not only in air compliance but also in engine operation and maintenance, emission testing, and the properties and regulation of natural gas.

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