

# ENVIRONMENTAL ENGINEERING AT UB

DEPARTMENT OF CIVIL, STRUCTURAL AND ENVIRONMENTAL ENGINEERING

## Environmental Engineers: Protecting 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 supplies from terrorist threats at home, environmental engineers defend the global public health and ecosystem viability.

## World Class People Making A Difference



### Student Profile

#### Emily Nuding

##### Senior in Environmental Engineering

Emily is a Hamburg, New York native and has a unique appreciation for Buffalo's natural beauty and its remnants of industry. Love Canal always intrigued her but it wasn't until Emily read about Chernobyl that she became truly fascinated with the environment, its effect on human health, and the quality of life. Since then, she knew environmental engineering was the right path for her.

In the past year, Emily participated in two national American Society of Civil Engineers events: a seismic design competition in San Diego, and a concrete canoe competition in Evansville, Indiana. She was also a team leader of Engineers for a Sustainable World's Parks Project, an ongoing collaborative effort with a local block club to turn an empty lot in Buffalo into an urban garden.

Emily was nominated for the Morris K. Udall Environmental Leadership Scholarship, and most recently received a Julian Snyder Endowment Fund award. After graduation, she plans to stay at UB to earn her M.S. in Environmental Engineering.



### Graduate Student Profile

#### Shannon Seneca

##### Ph.D. in Environmental Engineering

Shannon Seneca (on the left) is a western New York native and is a member of the local indigenous population. She is currently completing her doctoral studies in UB's Department of Civil, Structural, and Environmental Engineering, where she also received her M.S. in Environmental Engineering.

Shannon's dissertation work concerns the deployment and analysis of a full-scale permeable treatment wall at a western New York nuclear facility. This work has been conducted in collaboration with the consulting firm AMEC Geomatrix, the U.S. Department of Energy, and West Valley Environmental Services. Her primary research focus is geochemistry and groundwater remediation, and she also received a National Science Foundation traineeship through UB's Integrative Graduate Education and Research Traineeship (IGERT) program in ecosystem restoration. Through IGERT, she was involved with the Buffalo Niagara Riverkeeper to assess water quality and hydrology management of a restored wetland in Buffalo NY.



### Faculty Profile

#### James N. Jensen

When engineers think of drinking water treatment plants, they usually picture huge tanks processing millions of gallons of water per day. However, Dr. James N. Jensen and his students think of small, sustainable systems making just enough water for a family. For example, Dr. Jensen's students have investigated the coagulation properties of the seeds of the *Moringa oleifera* tree, a "grow your own" approach to removing particles from water. His students also are making ceramic water filters from sawdust and clay by hand, which are comparable to engineered materials for filtration. With nearly one billion people in the world lacking safe drinking water, Dr. Jensen and his students are seeking to change the world, one drop of water at a time.

Dr. Jensen came to UB after completing his Ph.D. in Environmental Science and Engineering at the University of North Carolina (UNC) at Chapel Hill in 1988. He earned a B.S. in Environmental Engineering Science at Caltech in 1980, and M.S. in Public Health at UNC in 1983.



# ENVIRONMENTAL ENGINEERING AT UB - A PERFECT FIT

## Hydraulic Engineers

apply scientific principles to the study of surface waters (lakes and rivers) and groundwaters. They help solve problems in drinking water supply and the transport of contaminants. At UB, you will have the opportunity to explore hydrosystems engineering in the lab, classroom, and the field.

## Ecosystem Restoration Engineers

take the guesswork out of stream, wetlands and lake restoration by using sound scientific and engineering principles. They help turn back the clock on societal impacts and return our ecosystems, such as the Great Lakes, to a more pristine and sustainable state. At UB, you will have the opportunity to work with professionals on sustainable restoration projects.

## Treatment Process Engineers

design facilities for the removal of society's byproducts from air and water. They help communities provide safe drinking water and help protect water resources through wastewater treatment. At UB, you will design treatment processes and visit treatment plants to see how your knowledge can be put into concrete and steel.

## Public Health Engineers

focus on using engineering to improve the health of the world's people. They employ both low-technology and technology-intensive solutions to reduce waterborne diseases. Your UB education will prepare you to pursue a career in public health engineering.

## Sustainable Energy Engineers

realize that energy and environmental problems cannot be solved independently. They seek environmentally sustainable solutions to the world's energy challenges. At UB, energy and sustainability are interwoven in the curriculum to provide the background you need to make a difference.



## Student Clubs

Want to get to know students and faculty outside the classroom? Consider joining one of the more than 30 student clubs in engineering. Some of the more popular clubs for environmental engineering students include Engineers without Borders, Engineers for a Sustainable World, and the Student Chapter of the American Society of Civil Engineers. Involvement in these clubs helps enrich your academic experiences and provides you with strong leadership opportunities, along with some great memories!

## Why UB?

- ▶ High quality education
- ▶ Small school environment
- ▶ Large school opportunities
- ▶ Cost for NYS Resident, 2011-2012
  - ▶ \$7,482 Tuition/Fees
  - ▶ \$11,162 Room/Board (average)

## Why Environmental Engineering?

- ▶ Faculty at the leading edge of their disciplines
- ▶ Undergraduate research opportunities
- ▶ Highly successful intern and placement programs
- ▶ Research centers in the Great Lakes, Ecosystem Restoration, and Waste Management
- ▶ 35,000 square feet of teaching and research labs
- ▶ \$9.8 million in annual departmental research expenditures
- ▶ No classes taught by teaching assistants
- ▶ National average starting salary in June 2011: \$55,309

## Chair's Message

As Chair of the Department of Civil, Structural and Environmental Engineering at the University at Buffalo, I invite you to discover our world-class students, faculty, facilities, and programs. As generations of our graduates can attest, a degree in Environmental Engineering from UB is the foundation from which you will build a career infused with purpose, pride and accomplishment. To learn more about the department, we encourage you to visit us soon. **Andrew Whittaker, Chair**

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