

Biological and Agricultural Engineering

ENVIRONMENTAL ENGINEERING OPTION

Develop equipment and systems that clean up pollution and protect the environment.

THIS MAJOR IS A GOOD FIT IF YOU CAN SEE YOURSELF:

STUDYING math, biology, and physics

COMMUNICATING AND WORKING on teams that include environmental scientists, land managers, and industry experts

USING YOUR CREATIVITY and scientific knowledge to plan and build new devices and ways of doing things

This major will give you skills to design equipment and manage industrial processes that make efficient and sustainable use of natural resources. Learn to monitor groundwater quality, measure sediment levels, and treat waste. Develop ways to make biofuels from agricultural products, byproducts, and waste. Our faculty is currently researching many topics in environmental engineering. They are developing computer models to predict the effects of climate change on water availability in Idaho, treating polluted soil and aquifers using microbes, designing bioreactors that make natural gas from animal waste, tracing lead poisoning through the digestive tracts of native snow geese, and much more.

INSIDE THE CLASSROOM

Courses in math, chemistry, and microbiology prepare you for more advanced topics, including bioremediation, thermodynamics, and fluid mechanics. Much of your education takes place in labs. Experiment with how microbes break down hazardous waste in the bioremediation lab. Explore water quality and use in the water resources lab. Use state-of-the-art groundwater flow programs in the computing lab. Design a remote-powered water sampler in the instrumentation lab. Senior year, you will draw on everything you've learned to solve a real-world problem for an industry sponsor. You and your teammates might use microbes to break down paper pulp waste for Potlatch Corporation, or construct a rain chamber to test utility meters for Itron. Present your findings at the UI Engineering Expo.

OUTSIDE THE CLASSROOM

INTERN. Get practical experiences like these: U.S. BUREAU OF RECLAMATION Model scenarios for the effects of climate change on groundwater availability in Idaho . . . CORNELL UNIVERSITY Use earthworms to detect heavy metals in hazardous waste. . . BERMUDA BIOLOGICAL STATION FOR RESEARCH Study the ocean's role in regulating Earth's climate.

STUDY ABROAD. Deepen your understanding of your major—and the world—in countries like these: SWEDEN Help design a sustainable student housing project . . . MEXICO Evaluate the function of absorbents in cleaning biodiesel . . . TAIWAN Reach speeds of 190 miles per hour on a bullet train.

DO RESEARCH. Make hands-on discoveries. Earn money working with faculty on grant-funded research. CENTER FOR HAZARDOUS WASTE REMEDIATION RESEARCH Analyze how microbes break apart hazardous compounds in soil and water . . . BIODIESEL EDUCATION GRANT Take part in one of many alternative-fuels research projects . . . WATERS OF THE WEST PROJECT Consult with lawyers and biologists to give them an engineer's perspective on real-world problems from pollution to drought.

FASTFACT

Our seniors built a rain chamber to see how utility equipment holds up when exposed to the elements.

GET INVOLVED. Network and have fun. AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS Join the student branch, plan parties, and meet business leaders and potential employers . . . TAU BETA PI Receive career assistance and leadership opportunities through the national honor society of engineers . . . SOCIETY OF WOMEN ENGINEERS Network and develop professionally.

CAREER OPPORTUNITIES

Our graduates are highly sought by government agencies, environmental consulting firms, and nonprofit organizations, with starting salaries of up to \$60,000.

Here are a few possibilities:

RESEARCH ENGINEER. Test and refine new products. Conduct hazardous-waste management studies and design sustainable irrigation, waste-handling, and energy systems. Explore solutions to problems such as acid rain.

BIOREMEDIATION ENGINEER. Advise on environmental restoration. Visit sites to observe problems, consult with contractors, and monitor cleanup activities.

REGULATORY ENGINEER. Enforce environmental regulations. Advise on pollution treatment and containment.

PROJECT ENGINEER. Estimate the time and cost to complete projects. Monitor or direct operations such as gasoline spill cleanups.

COMBINE YOUR EDUCATION. A second language can open doors to international careers. Depending on your goals, take microbiology, hydrology, or other types of engineering courses.

CONTINUE YOUR EDUCATION. Earn an advanced degree in environmental engineering or public policy.

FIND OUT MORE ABOUT THE UNIVERSITY OF IDAHO BIOLOGICAL AND AGRICULTURAL ENGINEERING MAJOR

WWW.CALS.UIDAHO.EDU/BAE

	FRESHMAN		SOPHOMORE		JUNIOR		SENIOR	
FALL	BAE 142	2	BAE 242	3	Engr 320	3	BAE 355	3
	Engineering for Living Systems		Engineering Analysis & Design		Engineering Thermodynamics & Heat Transfer		Fundamentals of Hydrologic Engineering	
	Chem 111	4	Biol 115	4	Engr 335	3	BAE 441	3
	Principles of Chemistry I		Cells & the Evolution of Life		Engineering Fluid Mechanics		Instrumentation & Measurements	
	CORE 103-149	4	Chem 277/278	4	Engr 350	3	BAE 478	2
	Core Discovery Course		Organic Chemistry/Lab		Engineering Mechanics of Materials		Engineering Design I	
Engr 102	3	Math 275	3	MMBB 380	4	BAE 491	1	
College Writing & Rhetoric		Analytic Geometry & Calculus III		Introductory Biochemistry		Senior Seminar		
Math 170	4	Phys 212	3	Elective	3	CE 330	3	
Analytic Geometry & Calculus I		Engineering Physics II		Elective—Humanities or Social Science		Fundamentals of Environmental Engineering		
						Elective	3	
						Elective—BAE		
	TOTAL	17	TOTAL	17	TOTAL	16	TOTAL	15
SPRING	BAE 143	2	Engr 210	3	BAE 462	3	BAE 461	3
	Engineering Problem Solving or CS 112	3	Engineering Statics		Electric Power & Controls		Bioprocess Engineering	
	Intro. to Problem Solving & Programming		Engr 240	3	Engr 105	2	BAE 479	2
	Chem 112	5	Intro. to Electrical Circuits		Engineering Graphics		Engineering Design II	
	Principles of Chemistry II		Math 310	3	Engr 360	2	Comm 101	3
	CORE 153-199	3	Ordinary Differential Equations		Engineering Economy		Fundamentals of Public Speaking	
	Core Discovery Course		MMBB 250/255	5	Stat 301	3	Electives	6
Math 175	4	General Microbiology/Lab		Probability & Statistics		(For example, BAE 452 Environmental Water Quality)		
Analytic Geometry & Calculus II		Soil 205	3	Elective	3	Elective	3	
Phys 211/211L	4	Soil Ecosystem		Elective—Humanities or Social Science		Elective—Humanities or Social Science		
Engineering Physics I/Lab								
	TOTAL	18-19	TOTAL	17	TOTAL	13	TOTAL	17

Total for degree = 128 credits. Course offerings may change from year to year. Always check the current course catalog.

TO LEARN MORE
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"I've always been interested in environmental policies and causes. I wanted a challenge and a major that I felt would give me skills to make a difference."

ALEX EDSTROM, *environmental engineering option*