

Biological and Agricultural Engineering

SOIL AND WATER ENGINEERING OPTION

Design equipment and processes that help protect soil and water.

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

STUDYING math, biology, and physics

COMMUNICATING AND WORKING in teams that may include environmental scientists, government land managers, and farmers.

USING CREATIVITY, scientific knowledge, and engineering skills to solve technological problems

This major will give you the skills to design systems to control runoff, restore waterways, treat water, and protect or create wetlands. Learn about drainage, soil erosion, and the environmental effects of sediment on stream quality. Help develop more efficient ways to use soil and water and reduce pollution. Our faculty is currently researching many topics in soil and water engineering, including watershed hydrology, the effects of climate change on water availability, and the transport of disease-causing microorganisms in groundwater.

INSIDE THE CLASSROOM

Courses in math, soils, and fluid mechanics prepare you to take on more advanced courses in hydrology, soil chemistry, and pesticide cycling in the environment. Much of your education takes place in labs. Experiment with different ways to help water infiltration without erosion. Explore water quality and use in the water resources lab. Use state-of-the-art groundwater flow programs in the computing 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 design a specialized sediment trap for the research flume at the Center for Ecohydraulics Research, or construct a rain chamber to test utility meters for Itron. Present your work at the UI Engineering Expo.

OUTSIDE THE CLASSROOM

INTERN. Get practical experiences like these: POTLATCH CORPORATION Analyze waste water for a large paper-making mill . . . IDAHO DEPARTMENT OF WATER RESOURCES Take weekly water samples, test nutrient levels, and monitor water usage in different areas of the state . . . FARM BUREAU Research water use as a legislative intern.

STUDY ABROAD. Deepen your understanding of your major—and the world—in countries like these: SWEDEN Help design a sustainable student housing project that saves and reuses water . . . INDIA Observe 1,000-year-old farming practices on terraced hillsides . . . MEXICO Evaluate the function of absorbents in cleaning water pollution.

DO RESEARCH. Make hands-on discoveries. Earn money working with faculty on grant-funded research. 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 . . . NATIONAL SCIENCE FOUNDATION Optimize bacteria to excrete cement-like compounds to make soil stronger, or collect data on the heat and water vapor created by a forest to make predictions about climate change.

FASTFACT

Our seniors designed a water filtration system that is being used by the Maasai tribe of Kenya.

GET INVOLVED. Network and have fun. AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS Join the student branch, meet business leaders and potential employers, and work with a team to build a ¼-scale tractor for the International Student Design Competition . . . TAU BETA PI Receive career assistance and leadership opportunities through this national honor society of engineers . . . SOCIETY OF WOMEN ENGINEERS Network and develop professionally.

CAREER OPPORTUNITIES

Our graduates are highly sought by manufacturers, biotechnology firms, government agencies, and nonprofit organizations with starting salaries of up to \$55,000.

Here are a few possibilities:

SOIL CONSERVATION ENGINEER. Visit sites to observe environmental problems, consult with contractors, and monitor construction activities.

REGULATORY ENGINEER. Work for a regulatory agency to ensure adherence to laws regarding soil and water.

PROJECT ENGINEER. Supervise construction of irrigation, waste-handling, and energy systems.

DESIGN ENGINEER. Design and test systems to control runoff, restore waterways, treat water, and protect or create wetlands.

COMBINE YOUR EDUCATION. A second language can open doors to international careers. Depending on your goals, take courses in soils, microbiology, civil engineering, or business.

CONTINUE YOUR EDUCATION. Earn an advanced degree in engineering, hydrology, or soil science.

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 Engineering for Living Systems	2	BAE 242 Engineering Analysis & Design	2	BAE 352 Soil & Water Engineering or CE 322 Hydraulics	3	BAE 355 Fundamentals of Hydrologic Engineering	3
	Chem 111 Principles of Chemistry I	4	Biol 115 Cells & the Evolution of Life	4	CE 211 Engineering Measurements	3	BAE 441 Instrumentation & Measurements	3
	CORE 103-149 Core Discovery Course	4	Engr 105 Engineering Graphics	2	Engr 320 Engineering Thermodynamics & Heat Transfer	3	BAE 451 Engineering Hydrology	3
	Engl 102 College Writing & Rhetoric	3	Engr 210 Engineering Statics	3	Engr 335 Engineering Fluid Mechanics	3	BAE 458 Open Channel Hydraulics	3
	Math 170 Analytic Geometry & Calculus I	4	Math 275 Analytic Geometry & Calculus III	3	Engr 350 Engineering Mechanics of Materials	3	BAE 478 Engineering Design I	2
			Phys 212 Engineering Physics II	3			BAE 491 Senior Seminar	1
	TOTAL	17	TOTAL	17	TOTAL	15	TOTAL	15
SPRING	BAE 143 Engineering Problem Solving or CS 112 Intro. to Problem Solving & Programming	2 3	Comm 101 Fundamentals of Public Speaking	2	BAE 462 Electric Power & Controls	3	BAE 459 Irrigation System Design	3
	Chem 112 Principles of Chemistry II	5	Engr 220 Engineering Dynamics	3	Stat 301 Probability & Statistics	3	BAE 479 Engineering Design II	2
	CORE 153-199 Core Discovery Course	3	Engr 240 Intro. to Electrical Circuits	3	Electives Electives—Humanities or Social Science	6	Engr 360 Engineering Economy	2
	Math 175 Analytic Geometry & Calculus II	4	Math 310 Ordinary Differential Equations	3	Elective (For example, BAE 558 Fluid Mechanics of Porous Media)	3	Elective Elective—Humanities or Social Science	3
	Phys 211/211L Engineering Physics I/Lab	4	Soil 205 Soil Ecosystem	3	Elective (For example, Soil 422 Environmental Soil Chemistry)	3	Electives (For example, Geog 483 Remote Sensing/GIS)	5
		TOTAL	18-19	TOTAL	14	TOTAL	18	TOTAL

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 was looking for a career where I could work outdoors and stay in Idaho. This was the best engineering major for me."

CODY NEWBILL, *biological and agricultural engineering major*