# Biological and Agricultural Engineering

## ECOHYDROLOGICAL 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

Prepare to solve technological problems of practical importance to the western United States, whether at the scale of a single farm or an entire watershed. Study soil and water engineering, water use, soil and water conservation, watershed engineering, nonpoint-source pollution, water quality, stream restoration, riparian buffer design, irrigation and drainage, and soil-plant-water relationships. Join faculty in research on topics such as the effects of climate change on water availability or the transport of disease-causing organisms in groundwater.

#### INSIDE THE CLASSROOM

Courses in math, soils, fluid mechanics, and hydrology prepare you for more-advanced courses in environmental water quality, geographic information systems (GIS), and pesticides in the environment. Do research on watershed hydrology and water quality, analyze water samples in the water quality lab, and learn about state-of-the-art software for modeling and data presentation. In your senior year you will draw on everything you've learned to solve a real-world problem for an industry sponsor. Working on a team, you might design an irrigation system in El Salvador or an automated streamflow measurement system back home. You will present your design 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.

**GET INVOLVED.** Network and have fun. AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS

## FAST**FACT**

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

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.UIDAHO.EDU/CALS/BAE

	FRESHMAN	SOPHOMORE		JUNIOR		SENIOR	
	BAE 1422Engineering for Living Systems2Chem 1114Principles of Chemistry I4Engl 1023College Writing & Rhetoric3ISEM 1013Integrated Seminar3Math 1704Analytic Geometry & Calculus I	BAE 242 Engineering Analysis & Des Biol 115 Cells & the Evolution of Life Engr 105 Engineering Graphics Engr 210 Engineering Statics Math 275 Analytic Geometry & Calco Phys 212 Engineering Physics II	2 sign 4 2 3 3 ulus III 3	CE 211 Engineering Measurements CE 322 Hydraulics Engr 320 Engineering Thermodynamics Heat Transfer Engr 335 Engineering Fluid Mechanics ISEM 301 Integrated Seminar Stat 301 Probability & Statistics	3 3 & 3 3 3 3 3	BAE 4503Environmental Hydrology3BAE 4583Open Channel Hydraulics3BAE 4783Engineering Design I3BAE 4911Senior Seminar3Elective3Elective—Humanities or SocialScience	
FALL	TOTAL 16	TOTAL	17	TOTAL	18	TOTAL 13	
SPRING	Chem 1125Principles of Chemistry IIMath 175Analytic Geometry & Calculus IIPhys 211/211LAnalytic S I/LabElectiveBlective—Humanities or SocialScience	Comm 101 Fundamentals of Public Sp CS 112 Intro. to Problem Solving & Programming Engr 220 Engineering Dynamics Engr 240 Intro. to Electrical Circuits Math 310 Ordinary Differential Equa Soil 205 Soil Ecosystem	2 eaking 3 3 3 tions 3	BAE 355 Fundamentals of Hydrologic Engineering Engr 350 Engineering Mechanics of Mat Engr 360 Engineering Economy Elective Elective—Biological Science Elective Elective—Humanities or Socia Science Elective Elective Elective	3 terials 2 3 1 3	**BAE 4413Instrumentation & MeasurementsBAE 4523Environmental Water QualityBAE 4793Engineering Design IIElectives4Electives—EcohydrologicalEngineeringElective3ElectiveScience	TO LEAR toll free 1.88.84 1.888.84 www.uic ASSISTANT DIF COLLEGE RECF 208.8 aginst@uid www.uidaho.edu/cal DEPARTMENT OF BIOL AND AGRICI
	TOTAL 16	TOTAL	17	TOTAL	17	TOTAL 16	ENGIN 208.8 baengr@uid

Total for degree = 128 credits. Course offerings may change from year to year. Always check the current course catalog. \*\*Offered in spring of even years

**University of Idaho** College of Agricultural and Life Sciences

www.uidaho.edu/cals/bae