

Biological and Agricultural Engineering

AGRICULTURAL ENGINEERING OPTION

Design and test equipment and processes that make agriculture safe and sustainable.

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

STUDYING math, physics, soils, and earth sciences

COMMUNICATING AND WORKING in teams that may include farmers, ranchers, plant scientists, and policymakers

USING CREATIVITY, scientific knowledge, and engineering expertise to design equipment and systems for agriculture

This major gives you the skills to design practical and efficient solutions to producing, storing, transporting, processing, and packaging agricultural products. Learn the fundamentals of designing agricultural machinery, equipment, and structures. Devise more efficient ways to use natural resources and reduce pollution. Develop ways to make biofuels from agricultural products, byproducts, and waste. Our faculty is currently researching many topics in agricultural engineering, including machine vision, precision irrigation systems, biological waste treatment, and biofuel production.

INSIDE THE CLASSROOM

Courses in math, soils, and fluid mechanics prepare you for more advanced courses in geographic information systems (GIS) and pesticides in the environment. Much of your education takes place in labs: Explore water quality and use in the water resources lab. Make discoveries about renewable energy in the biodiesel and biofuel labs. Design controls and switches in the power lab. Use computer-aided design technology (CAD) in the computing lab. Senior year, you will draw on everything you have learned to solve a real-world problem for an industry sponsor. Working in a team, you might transform used French fry cooking oil into biodiesel for the J. R. Simplot Company, or design a better conveyor belt gate for Key Technologies. Present your findings at the UI Engineering Expo.

OUTSIDE THE CLASSROOM

INTERN. Get practical experiences like these: SCAFCO GRAIN SYSTEMS Work on designs and cost estimates for farm storage structures . . . IDAHO DEPT. OF WATER RESOURCES Take weekly water samples, test nutrient levels, and monitor water usage . . . IDAHO FARM BUREAU FEDERATION Analyze current issues affecting the quality of life for farm and ranch families.

STUDY ABROAD. Deepen your understanding of your major—and the world—in countries like these: SWEDEN Help design a sustainable student housing project . . . MEXICO Tour chicken farms and a tequila manufacturing plant . . . INDIA Learn about 1,000-year-old farming practices on terraced hill-sides.

DO RESEARCH. Make hands-on discoveries. Earn money working with faculty on grant-funded research. AGRABILITY PROJECT Explore new equipment and processes to help people with disabilities work in production agriculture . . . USDA RESEARCH GRANT Design a probe that uses UV light to detect the amount of biodiesel in a blend . . . DEPARTMENT OF ENERGY Discover why biodiesel causes less engine wear than regular diesel.

FASTFACT

A UI senior was a paid consultant in the building of a biodiesel plant.

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, agribusiness firms, government agencies, and nonprofit organizations, with starting salaries of up to \$55,000.

Here are a few possibilities:

DESIGN ENGINEER. Design, fabricate, and test agricultural machinery components and equipment.

PROJECT ENGINEER. Plan and supervise the construction of structures for crop storage, animal shelter and loading, and animal and crop processing.

QUALITY CONTROL ENGINEER. Ensure equipment operates safely and efficiently for a company like John Deere.

CONSULTANT. Advise on issues such as pollution management and water use. Conduct educational programs that help farmers improve agricultural productivity.

COMBINE YOUR EDUCATION. A second language can open doors to international careers. Depending on your career goals, take courses in food science, business, and other types of engineering.

CONTINUE YOUR EDUCATION. Earn an advanced degree in engineering or food 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	2	BAE 242	2	CE 211	3	BAE 352	3
	Engineering for Living Systems		Engineering Analysis & Design		Engineering Measurements		Soil & Water Engineering	
	Chem 111	4	Biol 115	4	Engr 320	3	BAE 355	3
	Principles of Chemistry I		Cells & the Evolution of Life		Engineering Thermodynamics & Heat Transfer		Fundamentals of Hydrologic Engineering	
	CORE 103-149	4	Engr 105	2	Engr 335	3	BAE 441	3
	Core Discovery Course		Engineering Graphics		Engineering Fluid Mechanics		Instrumentation & Measurements	
Engl 102	3	Engr 210	3	Engr 350	3	BAE 478	2	
College Writing & Rhetoric		Engineering Statics		Engineering Mechanics of Materials		Engineering Design I		
Math 170	4	Math 275	3	Elective	3	BAE 491	1	
Analytic Geometry & Calculus I		Analytic Geometry & Calculus III		Elective—Humanities or Social Science		Senior Seminar		
		Phys 212	3			CE 342	3	
		Engineering Physics II				Theory of Structure		
	TOTAL	17	TOTAL	17	TOTAL	15	TOTAL	15
SPRING	BAE 143	2	Comm 101	2	BAE 372	3	BAE 459	3
	Engineering Problem Solving or CS 112	3	Fundamentals of Public Speaking		Agricultural Power & Machinery		Irrigation System Design	
	Intro. to Problem Solving & Programming		Engr 220	3	BAE 462	3	BAE 461	3
	Chem 112	5	Engineering Dynamics		Electric Power & Controls		Bioprocess Engineering	
	Principles of Chemistry II		Engr 240	3	Engr 360	2	BAE 479	2
	CORE 153-199	3	Intro. to Electrical Circuits		Engineering Economy		Engineering Design II	
Math 175	4	Math 310	3	Stat 301	3	Electives	4	
Analytic Geometry & Calculus II		Ordinary Differential Equations		Probability & Statistics		(For example, Soil 438 Pesticides in the Environment)		
Phys 211/211L	4	Soil 205	3	Electives	6	Elective	3	
Engineering Physics I/Lab		Soil Ecosystem		(For example, Geog 483 Remote Sensing/GIS)		Elective—Humanities or Social Science		
	TOTAL	18-19	TOTAL	17	TOTAL	17	TOTAL	15

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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“Students in agricultural and biological engineering get a broad range of knowledge. When in your career do you only work on one particular subject of engineering? A person will be designing, wiring, doing structural analysis, and more.”

SHANNON STRITTMATTER, *agricultural engineering option*