

Biological and Agricultural Engineering

FOOD & BIOPROCESS ENGINEERING OPTION

Design and test new methods to process food and treat waste.

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

STUDYING math, biology, and physics

USING CREATIVITY, scientific knowledge, and engineering expertise to plan and build new devices and ways of doing things

USING STRONG COMMUNICATION SKILLS to work in teams that may include farmers, scientists, business people, and policy makers

This major gives you the skills to design and test new ways to process food using approaches that keep food high in quality, fresh, and safe to eat. You will also learn how biofuels are made from agricultural products, byproducts, and waste. Understand the fundamentals of treating municipal, industrial, and agricultural wastes. Learn about industrial processes such as sorting, grinding, and controlling large-scale chemical reactions. Help develop more efficient ways to use natural resources and reduce pollution. Our faculty is currently researching many topics in food and bioprocess engineering, including biological waste treatment and biofuel production.

INSIDE THE CLASSROOM

Courses in math, chemistry, and biology prepare you to study advanced engineering and food science. Much of your education takes place in labs: Make discoveries about renewable energy in the biodiesel and biofuel labs. Learn how electricity flows in the power lab. Use state-of-the-art design software in the computing lab. Experiment with cold flow issues, storage stability, and nitrogen oxide emissions; evaluate engine warranty information. Senior year, you'll draw on everything you have learned to solve a 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: TILLAMOOK Work in the quality control lab of a cheese-making plant . . . RK MECHANICAL, INC. Design and estimate costs to build crop storage structures . . . TECHNOCHEM Build on-farm and industrial biodiesel plants.

STUDY ABROAD. Deepen your understanding of your major—and the world—in countries like these: MEXICO Tour chicken farms and a tequila manufacturing plant . . . INDIA Learn about 1,000-year-old farming practices on terraced hillsides . . . FRANCE Explore small wine and cheese manufacturers.

DO RESEARCH. Earn money working with faculty on grant-funded research projects: BIODIESEL EDUCATION GRANT Analyze how the Washington state ferries are using biodiesel for their fleets . . . 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.

GET INVOLVED. Network and have fun. AMERICAN SOCIETY OF AGRICULTURAL AND BIOLOGICAL ENGINEERS Join the student branch, plan parties or the homecoming float, meet business leaders and potential employers, and

FASTFACT

Our seniors created French Fry Fuel—biodiesel made from cooking oil waste.

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. Develop new equipment and systems for a food processor, pharmaceutical company, or equipment manufacturer.

PROCESS ENGINEER. Manage an operation to produce alternative fuel from algae.

QUALITY CONTROL ENGINEER. Supervise production in factories, determine the causes of component failure, and test manufactured products to maintain quality.

PROJECT ENGINEER. Estimate the time and cost to complete projects that improve operations and systems in a food processing or manufacturing plant.

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	Engr 320	3	BAE 355	3
	Engineering for Living Systems		Engineering Analysis & Design		Engineering Thermodynamics & Heat Transfer		Fundamentals of Hydrologic Engineering	
	Chem 111	4	Chem 277/278	4	Engr 335	3	BAE 441	3
	Principles of Chemistry I		Organic Chemistry/Lab		Engineering Fluid Mechanics		Instrumentation & Measurements	
	CORE 103-149	4	Engr 105	2	Engr 350	3	BAE 478	2
	Core Discovery Course		Engineering Graphics		Engineering Mechanics of Materials		Engineering Design I	
Engl 102	3	Math 275	3	Math 310	3	BAE 491	1	
College Writing & Rhetoric		Analytic Geometry & Calculus III		Ordinary Differential Equations		Senior Seminar		
Math 170	4	Phys 212	3	MMBB 380	4	Elective	3	
Analytic Geometry & Calculus I		Engineering Physics II		Introductory Biochemistry		Elective—Humanities or Social Science		
						Elective	3	
						Elective	3	
	TOTAL	17	TOTAL	14	TOTAL	16	TOTAL	15
SPRING	BAE 143	2	Biol 115	4	BAE 462	3	BAE 461	3
	Engineering Problem Solving or CS 112	3	Cells & the Evolution of Life		Electric Power & Controls		Bioprocess Engineering	
	Intro. to Problem Solving & Programming		Engr 210	3	Engr 360	2	BAE 479	2
	Chem 112	5	Engineering Statics		Engineering Economy		Engineering Design II	
	Principles of Chemistry II		Engr 240	3	FST 303	3	Comm 101	2
	CORE 153-199	3	Intro. to Electrical Circuits		Food Processing		Fundamentals of Public Speaking	
	Core Discovery Course		MMBB 250/255	5	Stat 301	3	Elective	3
Math 175	4	General Microbiology/Lab		Probability & Statistics		(For example, BAE 486 Food Rheology)		
Analytic Geometry & Calculus II		Soil 205	3	Elective	3	Electives	6	
Phys 211/211L	4	Soil Ecosystem		(For example, BAE 504 Production & Uses of Biofuels)		Electives—Humanities or Social Science		
Engineering Physics I/Lab								
	TOTAL	18-19	TOTAL	18	TOTAL	14	TOTAL	16

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 have always enjoyed finding relationships between math and science and the physical world. Engineering lets me use these relationships to solve problems to help people."

KARA EBY, biological and agricultural engineering major