Biological and Agricultural Engineering

BIOLOGICAL SYSTEMS ENGINEERING OPTION

Design and test equipment and systems that improve the health and function of living things.

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

STUDYING math, biology, and physics

COMMUNICATING AND WORKING in teams that may include engineers, doctors, scientists, and entrepreneurs

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

This major gives you the skills to design, manage, and develop systems and equipment to improve the health and safety of people, animals, and the environment. You will gain a solid understanding of the neurological, muscular, and mechanical functions that occur in the human body. You will learn to assess weaknesses in these functions and to design solutions, for example, a prosthesis for a missing limb or a new way to deliver drugs to cells.

INSIDE THE CLASSROOM
Courses in math, chemistry, and animal physiology prepare you for more advanced courses in neurobiology, biochemistry, and biomechanics. Much of your education takes place in labs. Design instruments that measure biological functions in the biosensors lab. Examine body movement and function in the human anatomy and biomechanics lab. Understand how electricity flows in the power lab. Use state-of-the-art design software in the computing lab. Senior year you will draw on everything you have learned to solve a real-world problem. You and your teammates might design an artificial leg that lengthens as a child grows or develop an easy-to-use baby monitor to prevent sudden infant death. Present your findings at the UI Engineering Expo.

OUTSIDE THE CLASSROOM

INTERN. Get practical experiences like these: PHYSICIANS FOR PEACE Fabricate and fit prostheses for Iraqi citizens and soldiers . . . CORNELL UNIVERSITY Use earthworms to detect heavy metals in hazardous waste . . . BOISE VA MEDICAL CENTER Perform studies evaluating heart function in elderly patients on cancer treatment.

STUDY ABROAD. Deepen your understanding of your major—and the world—in countries like these: MEXICO Study incidence of waterborne diseases in children . . . TAIWAN Explore ancient remedies sold in a traditional night market . . . SWEDEN Learn about cutting-edge medical advances.

DO RESEARCH. Earn money working with faculty on grant-funded research. IDAHO NATIONAL LABORATORY Examine how human cells react to different types of radioactive material . . . NATIONAL SCIENCE FOUNDATION Design and test a sensor that measures blood flow in the human body . . . CENTERS FOR DISEASE CONTROL AND PREVENTION Help build a national database on the human health effects of nanoparticles like those used in deodorant and makeup.

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

FASTFACT

Some of our graduates choose medical or dental schools.

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

Here are a few possibilities:

MEDICAL RESEARCH ENGINEER. Design and test new products such as sensors to monitor important systems in the human body. Design medical equipment, prostheses, and aids for disabled individuals.

QUALITY CONTROL ENGINEER. Test equipment such as insulin pumps and heart monitors to ensure proper functioning.

INDUSTRIAL DESIGN ENGINEER. Develop new products and systems for industrial processes. Create safe, ergonomic equipment for industrial workers.

PROJECT ENGINEER. Estimate the time and cost to complete projects. Supervise pharmaceutical, medical, equipment, and other operations.

COMBINE YOUR EDUCATION. A second language can open doors to international careers. Depending on your goals, take courses in chemistry, microbiology, molecular biology, animal physiology, business, or other types of engineering.

CONTINUE YOUR EDUCATION. Earn an advanced degree in biomedical engineering or life sciences. Go to medical or dental schools.

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

WWW.UIDAHO.EDU/CALS/BAE

BIOLOGICAL AND AGRICULTURAL ENGINEERING BIOLOGICAL SYSTEMS ENGINEERING OPTION

4-YEAR PLAN 2012-13

	FRESHMAN		SOPHOMORE		JUNIOR		SENIOR	
FALL	**BAE 142** Engineering for Living Systems	2	**BAE 242** Engineering Analysis & Design	2	**Engr 320** Engineering Thermodynamics & Heat Transfer	3	**BAE 478** Engineering Design I	3
	Chem 111 Principles of Chemistry I	4	**Chem 277/278** Organic Chemistry/Lab	4	**Engr 335** Fluid Mechanics	3	**BAE 491** Senior Seminar	1
	Engl 102 College Writing & Rhetoric	3	**Math 275** Analytic Geometry & Calculus III	3	**Engr 350** Engineering Mechanics of Materials	3	**Stat 301** Probability & Statistics	3
	ISEM 101 Integrated Seminar	3	**MMBB 250/255** General Microbiology/Lab	5	**MMBB 380** Introductory Biochemistry	4	**Elective** Elective—Humanities or Social Science	3
	Math 170 Analytic Geometry & Calculus I	4	**Phys 212** Engineering Physics II	3	**Elective** Elective—Humanities or Social Science	3	**Elective** Elective—Technical	3
							Elective Elective—Upper-division Biological Science	3
	TOTAL	**16**	**TOTAL**	**17**	**TOTAL**	**16**	**TOTAL**	**16**
SPRING	**Chem 112** Principles of Chemistry II	5	**Biol 115** Cells & the Evolution of Life	4	****BAE 462** Electric Power & Controls	3	***BAE 441** Instrumentation & Measurements	3
	Math 175 Analytic Geometry & Calculus II	4	**Engr 105** Engineering Graphics	2	**Comm 101** Fundamentals of Public Speaking	2	**BAE 461** Bioprocess Engineering	3
	Phys 211/211L Engineering Physics I/Lab	4	**Engr 210** Engineering Statics	3	**Engr 360** Engineering Economy	2	**BAE 479** Engineering Design II	3
	Elective Elective—Humanities or Social Science	3	**Engr 240** Intro. to Electrical Circuits	3	**Soil 205** Soil Ecosystem	3	**Elective** (For example, PEP 300 Applied Human Anatomy & Biomechanics)	3
			Math 310 Ordinary Differential Equations	3	**Elective** Elective—Humanities or Social Science	3	**Elective** Elective—Technical	3
					Elective Elective—Technical	3		
	TOTAL	**16**	**TOTAL**	**15**	**TOTAL**	**16**	**TOTAL**	**15**

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

**Offered in spring of odd years

TO LEARN MORE
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University of Idaho
College of Agricultural and Life Sciences