Biochemistry

Use your knowledge of cellular functions to improve the health of plants, animals, and humans.

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

EXPLORING HOW CELLS DEVELOP and communicate

USING YOUR IMAGINATION and attention to detail

EXPERIMENTING with biological chemicals in state-of-the-art laboratories

This major teaches you about the chemical processes in living organisms. Study the structure of proteins, carbohydrates, lipids, nucleic acids, and other biomolecules that control how cells grow and perform. Understand key cellular processes such as DNA replication, protein secretion, energy metabolism, and immune responses. Apply your knowledge to develop new and improved medicines, genetically engineer hardier plants, or create safer and cleaner fuels, pesticides, and industrial processes. Since 2000, our department has received $60 million in grants from the National Institutes of Health and the National Science Foundation to study infectious diseases.

INSIDE THE CLASSROOM
Learn fundamental laboratory skills such as how to purify a protein, determine the structure of a lipid, or grow a culture of cells. Senior year, you will draw on everything you've learned when you design and carry out your own research project. For example, you might compare a normal protein to a mutant form to understand how a difference in protein folding inhibits the binding of oxygen. Receive guidance from a professor and present your findings at a poster competition.

OUTSIDE THE CLASSROOM

INTERN. Get practical experiences like these: NATIONAL INSTITUTES OF HEALTH Separate strands of DNA for a biomedical research project . . . MARINE BIOLOGICAL LABORATORY Study how an embryo develops . . . PHARMACEUTICAL COMPANY Help design a drug that targets a specific enzyme to reduce cholesterol.

STUDY ABROAD. Deepen your understanding of your major—and the world—in countries like these: SPAIN Take science classes in Spanish . . . SWITZERLAND Observe a different health care system . . . MEXICO Study how disease is managed in rural villages.

DO RESEARCH. Work for pay or credit in an on-campus laboratory. Conduct lab procedures and collect findings. You might study the ability of virus-infected cells to repair DNA, the relationship between protein flexibility and biological function, or the movements of cells.

VOLUNTEER. Give back. Assist hospital medical staff as they care for patients. Treat sick pets in a veterinary clinic. Work at a clinic in a developing country.

GET INVOLVED. Network and have fun. MMBB CLUB Teach lab techniques to school children, learn more about internships, and meet experts in the field. Take trips to biotech companies, breweries, research centers, and hot springs . . . PRE-VET CLUB Meet other students planning for vet school and volunteer at a horse sanctuary . . . UI ENVIRONMENTAL CLUB See what you and others can do to live more sustainably.

FASTFACT

You could study how a small mutation in a protein of a cell can cause polycystic kidney disease, and help find a cure.

CAREER OPPORTUNITIES
Demand for our graduates is high. Work for biotechnology or pharmaceutical companies or the agricultural industry. Conduct research in university or government laboratories. Salaries start as high as $50,000.

Here are a few possibilities:

MEDICAL RESEARCHER. Conduct studies to advance the knowledge of life processes and living organisms, including a greater understanding of immune responses to viruses, bacteria, and other infectious agents.

AGRICULTURAL BIOCHEMIST. Modify and improve crops such as rice, soybeans, and wheat to improve our food supply and reduce our dependence on conventional pesticides.

PHARMACEUTICAL SCIENTIST. Design and synthesize new drugs and delivery systems. Collect data on patients in clinical trials, monitor their reactions, and analyze the results.

INDUSTRIAL BIOCHEMIST. Develop cleaner production processes that create less waste and use less energy and water in the production of detergents, pulp and paper, textiles, food, energy, and metals.

COMBINE YOUR EDUCATION. Take classes in a foreign language, plant or animal science, law, engineering, soils, agribusiness, economics, or journalism.

CONTINUE YOUR EDUCATION. Many of our graduates go on to medical, nursing, dental, pharmacy, or veterinary schools or earn advanced degrees in medical technology or biochemistry.

FIND OUT MORE ABOUT THE UNIVERSITY OF IDAHO BIOCHEMISTRY MAJOR

WWW.CALS.UIDAHO.EDU/MMBB

BIOCHEMISTRY

	FRESHMAN		SOPHOMORE		JUNIOR		SENIOR	
FALL	**Chem 111** Principles of Chemistry I	4	**Chem 253** Quantitative Analysis	5	**Chem 305** Physical Chemistry I	3	**Biol 210** Genetics	4
	CORE 103-149 Core Discovery Course	4	**Chem 277/278** Organic Chemistry I/Lab	4	**MMBB 380/382** Introductory Biochemistry/Lab	6	*or* **Gene 314** General Genetics	3
	Engl 102 College Writing & Rhetoric	3	**Phys 211/211L** Engineering Physics/Lab	4	**Stat 251** Statistical Methods	3	**MMBB 400** Seminar	1
	Math 170 Analytic Geometry & Calculus I	4	**Math 275** Calculus & Analytic Geometry III	3	**Elective** Elective—Core	3	**MMBB** Elective—Biochemistry	3
	Elective Elective	3					**Electives** Electives	9
	TOTAL	18	**TOTAL**	16	**TOTAL**	15	**TOTAL**	16-17
SPRING	**Biol 115** Cells & the Evolution of Life	4	**Chem 372/374** Organic Chemistry II/Lab	4	**Chem 306** Physical Chemistry II	3	**MMBB 476** Biophysical Chemistry	3
	Chem 112 Principles of Chemistry II	5	**Engl 207** Persuasive Writing	3	**MMBB 442** Biochemistry II	3	**MMBB** Elective—Biochemistry	3
	CORE 153-199 Core Discovery Course	3	*or* **Engl 208** Personal & Exploratory Writing	3	**Elective** Elective—Core	3	**Elective** Elective—General International	3
	Math 175 Calculus & Analytic Geometry II	4	*or* **Engl 209** Inquiry-Based Writing	3	**Electives** Electives	6	**Electives** Electives	6
			or **Engl 317** Technical Writing	3				
			Phys 212/212L Engineering Physics II/Lab	4				
			Elective Elective—Core	3				
			Elective Elective	2				
	TOTAL	16	**TOTAL**	16	**TOTAL**	15	**TOTAL**	15

Total for degree = 128 credits. Course offerings may change from year to year. Always check the current course catalog.

"I plan to go to medical school, and this major is a good foundation for that. It's about how life works on a chemical level so it gives you the tools to study disease and hopefully find cures."

CONOR SHEEHY, *biochemistry major*

TO LEARN MORE
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College of Agricultural and Life Sciences