

BIOLOGY; MOLECULAR BIOLOGY (BIM) MAJOR

What you will study

DNA is the master molecule of living things. To understand how the most basic processes of life work, molecular biologists study DNA from many different perspectives in an integrated way. As an Alverno molecular biology student, you take a select program of biology and physical science courses that introduce you to a variety of theories and techniques that can be applied to DNA.

Your beginning courses follow the sequence of the biology major. They lay the foundation of biology and chemistry principles, and introduce the real world of laboratory experiments. You begin to develop the analytical and problem-solving skills of a practicing scientist, and you learn to work both independently and as part of a laboratory team.

As you move into the intermediate courses of the program, your studies become more focused on the fields of science that gave rise to molecular biology, and the disciplines of biology that intensively use molecular technology today. You learn to ask and answer more complex scientific questions. You work with scientific models to show how different concepts fit together, and you learn to build, test, and refine models through laboratory work. Progressing through the intermediate coursework, you appreciate how different disciplines of biology and chemistry reveal the molecular basis of life, and how molecular science supports all disciplines of biology.

In your advanced work, you become increasingly independent in learning through laboratory experiences, the scientific literature, and critical thinking about scientific questions. Your courses examine the scientific concepts that are critical to understanding how DNA makes up genes, how DNA controls cells, and how the knowledge of DNA can be used to change living organisms. You explore laboratory techniques that are routinely used in molecular biology research, and you learn how to adapt and combine those techniques to solve sophisticated laboratory problems. In the capstone course, you bring the diverse perspectives of your prior work together and examine molecular biology as a unique discipline within biology.

Science Courses

BI-223		0-5
or BI-221 & 221L	Biology of Plants and Biology of Plants Lab	
or BI-222 & 222L	Biology of Animals and Biology of Animals Lab	
or BI-233 & 233L	Human Anatomy & Physiology 1 and Human Anatomy & Physiology 1 Lab	
BI-251 & 251L	Microbiology and Microbiology Lab	4
BI-325 & 325L	Cellular Biology and Cellular Biology Lab	4
BI-328 or CH-328	Biochemistry	4
BI-361 & 361L	Genetics Lecture and Genetics Lab	4
BI-374	BI Assessment in Effective Citizenship	1
BI-399	Formal Introduction to Advanced Work	0
BI-425 & 425L	Molecular Biology and	4
BI-452	Immunology	3
BI-491	Senior Environmental Seminar	3
CH-213 & 213L	Chemistry of Bioorganic Molecules and Chemistry of Bioorganic Molecules Lab	4
CH-221 & 221L	Organic Chemistry 1 and Organic Chemistry 1 - Lab	4
CH-234 & 234L	Analytical Chemistry/Quantitative Analysis and Analytical Chem-Quant Analysis Lab	4
SC Elective	Biology (BI) or Chemistry (CH) Electives, one at 300 or 400 level, from BI-221, BI-222 & BI-222L, BI 223, BI 231 & BI 231L, BI 301, BI 302, BI 303, BI 304, BI-341, BI-441, BI 483, CH-260, CH-322, CH-337, BI-395, CH-441, CH-442, CH 483	5

Additional Requirements

INTERN-383	Internship Seminar	2
------------	--------------------	---

Requirements

Code	Title	Credits
Math/Physics Courses		
MT-123	College Algebra	3-4
or MT-148	Functions & Modeling	
or MT-152	Calculus 1	
MT-124	Trigonometry	2
MT-256	Probability and Statistics	4
PH-231 & 231L	Algebra-Based Physics I and Physics Lab	4
or PH-241 & 241L	Calculus-Based Physics 1 and Physics Lab	
PH-232 & 232L	Algebra-Based Physics 2 and Physics 2 Lab	4
or PH-242 & 242L	Calculus-Based Physics 2 and Calculus-Based Physics 2 Lab	