BIOLOGY PROGRAMS

Biology is a dynamic field leading to many rewarding careers. The employment rate for biologists is high and expected to remain strong.

Majors:

- **Biology** (BI.D.BS)
- **Biology: Human Biology** (BIHB.D.BS)
- **Biology Biomedical** (BISC.D.BS)

Minor

Biology (BI.D.SUP.2022)

Biology Major/Minor Information:

Biology, the study of living organisms and life processes, is the most all-encompassing of the sciences.

Faculty want you to use science effectively. Students participate in collaborative group work in introductory science courses. Students develop a real sense of the planning, the work, the excitement, and sometimes the frustration — the reality of doing science.

As students progress and refine and build upon the basic abilities, they continue to design and perform experiments in the laboratory and in the field. Students learn to use investigative projects to engage in the more complex work of making relationships and perceiving patterns.

In intermediate courses, students ask more in-depth questions. Students build and evaluate scientific models, showing how different biological concepts fit together — and subject these models to testing, practicing data collection and record keeping. Students strengthen their abilities through self-assessment, learning to be an independent judge of progress.

In advanced courses, students gain independence as a learner. They decide what approaches are appropriate for the problems being investigating and what statistical tests should be applied to answer your questions. Students learn the role of science in society and develop their own code of scientific ethics, preparing for a future as a professional biologist.

Biology is exciting because of is its diversity. A biologist might gather field samples, study the responses of human body to stress, or insert new genes into a microbe. Biologists seek to unravel the mystery of living organisms from the small molecules to large ecosystems. The biology curriculum is constantly evolving to ensure students have the knowledge and up-to-date skills to participate effectively in this fast-paced field.

Students focus on studies in one of several core areas leading to a variety of careers in fields like health care, industry, biotechnology, or research. Students apply biological knowledge to careers like science writing or environmental law.

Stellar science training

Students master the essential toolkit of the professional scientist: how to communicate effectively about scientific phenomena, analyze data, apply frameworks from various fields of science, and solve problems through scientific investigation with accuracy and safety. The biomedical emphasis in this major — through courses such as Human Anatomy and Physiology, Microbiology and Biochemistry — also help prepare for the Medical College Admission Test or other work in the health field.

Biomedical Internships

The Career Studio office is connected to many partner sites to help students find the right opportunity to advance their goals. Past internships sites have included the Medical College of Wisconsin, the Milwaukee County Health Department, Sigma Aldrich, the Water Technology Accelerator at the Global Water Center, and the Milwaukee County Zoo.

degree use

Many students move on to graduate from, medical or other professional health schools. Alverno graduates have gone on to study at the Medical College of Wisconsin, University of Wisconsin-Madison, University of Wisconsin-Milwaukee, Marquette University, University of Minnesota and Butler University, among other schools. Other students choose to go straight into the workforce in research, industry or teaching.

Biology (BI) Major Learning Outcomes:

After successfully completing the requirements for a Biology major, a student will be able to:

- Accurately interpret biological information and show the limitations of scientific analysis
- Demonstrate proficient library, mathematical and computer skills in biological data gathering and analysis
- Design, conduct and effectively communicate biological experiments
- Apply concepts of biology ethically to environmental and societal issues
- Work as a professional in the community

Biology (BI) Minor Learning Outcomes:

- Accurately interpret biological information and show the limitations of scientific analysis
- Demonstrate proficient library, mathematical and computer skills in biological data gathering and analysis
- Design, conduct and effectively communicate biological experiments
- Apply concepts of biology ethically to environmental and societal issues

Biology: Human Biology Major Information:

The Biology: Human Biology major is designed for a diverse group of students from future laboratory technicians to students interested in direct entry masters of nursing programs. The degree is suitable for students entering a physician assistant program or similar health related fields. The degree gives students a strong background in human anatomy, physiology, microbiology, and human diseases. Students develop scientific research skills that enable them to objectively apply these abilities to the discipline and their community.

Biology: Human Biology (BIHB) Learning Outcomes:

- Accurately interpret the biological basis of phenomena and show the limitations of scientific analysis
- Demonstrate proficient library, mathematical and computer skills in biological data gathering
- Design, conduct and communicate biological experiments
- Apply concepts of biology to human health, physiology, and diseases; and to work as a professional in the community.

Biology: Biomedical Science Information:

The Biology: Biomedical Science major is the foundation for students aspiring to attend medical school, dental school, veterinary school, or biomedical research. It allows students to combine coursework required for graduate, medical and other professional health schools in a flexible and efficient four-year program.

Biology: Biomedical Science (BISC) Learning Outcomes:

- Accurately interpret the biological and chemical basis of phenomena and show the limitations of scientific analysis
- Demonstrate proficient library, mathematical and computer skills in chemical and biological data gathering
- Design, conduct and communicate biological and chemical experiments
- Apply concepts of biology and chemistry to environmental, societal and biomedical issues
- Work as a professional in the community

Faculty

Contact for Biology Programs

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BI Major Req

Biology (BI.D.BS) Major Requirements 25-26 Catalog

Code	Title	Credits
BI-221	Biology of Plants (General Education)	4
or BI-222	Biology of Animals	
BI-233 & 233L	Human Anatomy & Physiology 1 and Human Anatomy & Physiology 1 Lab	4
BI-251 & 251L	Microbiology and Microbiology Lab	4
BI-341	Ecology	4
BI-325 & 325L	Cellular Biology and Cellular Biology Lab	4
BI-361 & 361L	Genetics Lecture and Genetics Lab	4
BI-374	BI Assessment in Effective Citizenship	1
BI-491	Senior Environmental Seminar	3
Biology Electives (NOT BI-233 or BI-341)		6-7
BI-222	Biology of Animals	
BI-328	Biochemistry With Laboratory	
BI-338	Pathophysiology	
BI-395	Biochemistry of Micronutrients	
BI-397	Independent Study	
BI-441	Animal Behavior	
BI-425	Molecular Biology	
BI-452	Immunology	
CH-213 & 213L	Chemistry of Bioorganic Molecules and Chemistry of Bioorganic Molecules Lab	4
INTERN-383	Internship Seminar	2
MT-123	College Algebra	3
MT-124	Trigonometry	2
MT-256	Probability and Statistics (General Education)	4
PH-231 & 231L	Algebra-Based Physics I and Physics Lab	4
PH-232 & 232L	Algebra-Based Physics 2 and Physics 2 Lab	4
SC-119 & 119L	Foundations of Chemistry and Foundations of Chemistry Lab	4
SC-120 & 120L	Foundations of Biology and Foundations of Biology Lab	4
Total Credits		**65-66**

BI Map

Biology (BI.D.BS) Map 25-26 Catalog

First Year

Fall	Credits	Spring	Credits
AC-151	0	CH-213 & 213L	4
FSS-125	2	BI-221 or 222	4
QL-122	4	CM-120	4
SC-119 & 119L	4	HUM-150	4
SC-120 & 120L	4		
	14		**16**

Second Year

Fall	Credits	Spring	Credits
ADV-299	0	BI-233 & 233L	4
BI-251 & 251L	4	BSC-215	2
CM-125	3	CM-225	3
FA-110	4	PPS-229	1
MT-256	4	MT-124	2

		MT-123	3
	15		**15**

Third Year

Fall	Credits	Spring	Credits
HFA-210	2	BI-374	1
BI-341	4	BI-325 & 325L	4
GLS-200, POL 225, PSY 110, or SW 200	3-4	HFA-310	2
BI Elective	3	Globally Effective Citizen Course, Choose One:GEC 302, AHS 409/GEC 307, GEC 312, GEC 314, GEC 315, GEC 317, GEC 320, GEC 324, GEC 328, GEC 333, GEC 398	3
		General Electives	6
	12-13		**16**

Fourth Year

Fall	Credits	Spring	Credits
BI-361 & 361L	4	PH-232	3
INTERN-383	2	BI-491	3
PH-231	3	General Electives	9
BI Elective	3		
General Elective	3		
	15		**15**

Total Credits 118-119

BIHB Major Req

Biology: Human Biology Major (BIHB.D.BS) Requirements 25-26 Catalog

Code	Title	Credits
BI-221 or BI-222	Biology of Plants Biology of Animals	4
BI-233 & 233L	Human Anatomy & Physiology 1 and Human Anatomy & Physiology 1 Lab	4
BI-251 & 251L	Microbiology and Microbiology Lab	4
BI-325 & 325L	Cellular Biology and Cellular Biology Lab	4
BI-333	Human Anatomy & Physiology II	3
BI-338	Pathophysiology	4
BI-361 & 361L	Genetics Lecture and Genetics Lab	4
BI-374	BI Assessment in Effective Citizenship	1
BI-491	Senior Environmental Seminar	3
BI-452	Immunology	3
CH-213 & 213L	Chemistry of Bioorganic Molecules and Chemistry of Bioorganic Molecules Lab	4
MT-123	College Algebra	3
MT-124	Trigonometry	2
MT-256	Probability and Statistics (General Education)	4
PH-231 & 231L	Algebra-Based Physics I and Physics Lab (General Education)	4
Choose 8 Elective Credits BI-221, BI-222, BI-425, CH-221 & 221L, CH-322 & 322L, CH-328		8
INTERN-383	Internship Seminar	2
Total Credits		**61**

BIHB Major Map

Biology: Human Biology (BIHB.D.BS) Map 25-26 Catalog

First Year

Fall	Credits	Spring	Credits
AC-151	0	BI-222	4
FSS-125	2	CH-213 & 213L	4
QL-122	4	CM-120	4
SC-119 & 119L	4	HUM-150	4
SC-120 & 120L	4		
	14		**16**

Second Year

Fall	Credits	Spring	Credits
ADV-299	0	BI-233 & 233L	4
BI-251 & 251L	4	BSC-215	2
CM-125	3	CM-225	3
FA-110	4	PPS-229	1
MT-256	4	MT-123	3
		MT-124	2
	15		**15**

Third Year

Fall	Credits	Spring	Credits
BI-333	3	BI-325 & 325L	4
BI Elective	4	BI-338	4
HFA-210	2	BI-374	1
GLS-200, POL 225, PSY 110, or SW 200	3-4	HFA-310	2
General Elective	3	General Electives	5
	15-16		**16**

Fourth Year

Fall	Credits	Spring	Credits
BI-361 & 361L	4	BI-452	3
Biology Elective	4	BI-491	3
Global Effective Citizen: Choose One Course: GEC 302, AHS 409/GEC 307, GEC 312, GEC 314, GEC 315, GEC 317, GEC 320, GEC 324, GEC 328, GEC 333, GEC 398	3	General Electives	6
INTERN-383	2		
PH-231 & 231L	4		
	17		**12**

Total Credits 120-121

BISC Major Req

Biology: Biomedical Science Major (BISC.D.BS) 25-26 Catalog

Code	Title	Credits
Intro Biology		
AC-151	Initial Social Interaction Assessment	0
BI-221	Biology of Plants	4
or BI-222	Biology of Animals	
or BI-341	Ecology	
SC-120 & 120L	Foundations of Biology and Foundations of Biology Lab (General Education)	4
SC-119 & 119L	Foundations of Chemistry and Foundations of Chemistry Lab	4
Core Requirements		
BI-233 & 233L	Human Anatomy & Physiology 1 and Human Anatomy & Physiology 1 Lab	4
BI-251 & 251L	Microbiology and Microbiology Lab	4
BI-374	BI Assessment in Effective Citizenship	1
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 Analys and Analytical Chem-Quant Analysis Lab	4
CH-322 & 322L	Organic Chemistry 2 and Organic Chemistry 2 Lab	4
FSS-125	First Semester Seminar (General Education)	2
QL-122	Quantitative Literacy in Modern World (General Education)	4
or BU-151	Personal Finance	
Biochemistry		
BI-328	Biochemistry With Laboratory	4
or CH-328	Biochemistry With Laboratory	
Cell Biology or Genetics		
BI-325 & 325L	Cellular Biology and Cellular Biology Lab	4
BI-361 & 361L	Genetics Lecture and Genetics Lab	4
Advanced Electives		
Choose 3 Upper-Level (300-400) Credits from BI, CH, PH, MT or SC		3
Math & Physics Requirements		
MT-123	College Algebra	3
MT-124	Trigonometry	2
MT-256	Probability and Statistics (General Education)	4
PH-231 & 231L	Algebra-Based Physics I and Physics Lab	4
INTERN-383	Internship Seminar	2
Total Credits		**79**

BISC Major Map

Biology: Biomedical Science Map (BISC.D.BS) 25-26 Catalog

First Year

Fall	Credits	Spring	Credits
AC-151	0	CH-213 & 213L	4
FSS-125	2	CM-120	4
QL-122	4	HUM-150	4
SC-119 & 119L	4	MT-123	3
SC-120 & 120L	4	MT-124	2
	14		**17**

Second Year

Fall	Credits	Spring	Credits
ADV-299	0	BI-222	4
BI-251 & 251L	4	BSC-215	2
CH-221 & 221L	4	CH-234 & 234L	4
CM-125	3	CM-225	3
FA-110	4	PPS-229	1
	15		**14**

Third Year

Fall	Credits	Spring	Credits
GLS-200, POL 225, PSY 110, or SW 200	3-4	BI-325 & 325L	4
CH-322 & 322L	4	BI-374	1
BI-233 & 233L	4	Global Effective Ciitizen Course: GEC 302, AHS 409/GEC 307, GEC 312, GEC 314, GEC 315, GEC 317, GEC 320, GEC 324, GEC 328, GEC 333, GEC 398	3
MT-256	4	HFA-210	2
		General Elective	4
	15-16		**14**

Fourth Year

Fall	Credits	Spring	Credits
BI-361 & 361L	4	BI-452	3
BI-328 or CH 328	4	BI-491	3
HFA-310	2	BI, CH, PH, SC or MT Upper-Level (300-400) Course	3
INTERN-383	2	General Electives	6
PH-231 & 231L	4		
	16		**15**

Total Credits 120-121

BI Minor Req

Biology Minor Requirements (BI.D.SUP.2022) 25-26 Catalog

Code	Title	Credits
Minor Core		
CH-213 & 213L	Chemistry of Bioorganic Molecules and Chemistry of Bioorganic Molecules Lab	4
BI-233 & 233L	Human Anatomy & Physiology 1 and Human Anatomy & Physiology 1 Lab	4
BI-251 & 251L	Microbiology and Microbiology Lab	4
BI-325	Cellular Biology	3
or BI-361	Genetics Lecture	
Intro Biology Option		
BI-221	Biology of Plants	4
BI-222	Biology of Animals	4
BI-341	Ecology	4
or BI-441	Animal Behavior	
Biology Electives		
Choose 6 Biology Elective Credits Upper Level (300-400), Except BI-325, 341, 361, 441		6
Biology Lab, Choose One:		0-4
BI-325L, BI-341, BI-361L, BI-441		
Total Credits		**33-37**