

Biological Sciences



Department of Natural Sciences
College of Arts, Sciences, and Letters

The Program

Biology is an extensive field that covers such diverse areas as molecular biology, cell biology, genetics, anatomy and physiology of plants and animals, embryology, ecology, field biology, and evolution. The program is recommended for students who wish to study biology as part of an undergraduate liberal arts degree, to prepare for graduate study in biology or any of the health professions, or to study for a secondary teaching certificate in biology.

Facilities

- Six teaching laboratories
- Ten research laboratories
- Natural Sciences computer facility
- Environmental chambers
- Science Learning Center
- Greenhouse (1,000 sq. ft.)
- Environmental Study area covering more than three hundred acres of fields, wetlands, and a beech-maple forest
- Environmental Interpretive Center

Requirements of the Major

Required Courses

Degree-seeking students are required to fulfill the required courses in effect at the time admitted or readmitted to the program. Since these are subject to change, students should see an advisor for current requirements.

Prerequisites

Prerequisite courses include calculus (Math 113-114), general chemistry (Chem 124 and 136 or 146), organic chemistry (Chem 225, 226, and 227) physics (Phys 125-126) and introductory biology (Biol 130-140).

Biology

Twenty-four credits of upper-division biology courses are required, with at least seven hours chosen from each of three areas: cell and molecular, organismal, and population and environmental biology.

Cognates

Students must complete six credits of upper-level courses in areas related to biology. These may include courses in natural sciences, earth science, mathematics, environmental studies, and a selection of courses from anthropology, psychology, and the history, philosophy, or literature of science.

Minor/Area of Focus

A minor or area of focus consists of twelve hours of upper-division credit in biology. All of these courses require prerequisites.

Certificate in Medical Sciences

Research

Research is considered an important part of biology, and students are encouraged to become involved in one of many studies being carried out by the faculty. A few of the many opportunities include work in:

- Embryology
- Environmental Toxicants
- Gene regulation
- Phytoremediation of heavy metals and polyaromatic hydrocarbons
- Plant viruses and anti-insect strategies in plants
- Science education
- Spiders
- Turtle population analysis on campus lake
- Urban ecology

Laboratory Training

In addition to working on research projects, students have the opportunity to increase their laboratory skills by employment as part of the laboratory preparation group. Many Biology concentrators also participate in the CASL Cooperative Education Program, undergraduate research projects directed by faculty, or work to prepare the instructional biology laboratories.

Organizations

Several organizations of interest to students in the biology discipline include Tri Beta, a biology honor society, and the Pre-Professional Health Society for students interested in any of the health careers.

Career Opportunities

A bachelor of science degree in biology from the University of Michigan–Dearborn prepares students to enter a variety of graduate programs in life sciences, as well as professional schools in the health fields such as medicine, dentistry, pharmacy and veterinary medicine. Recent graduates have found professional employment in laboratories at the University of Michigan School of Medicine, Environmental Protection Agency, Joslin Diabetes Lab at Harvard, Henry Ford Hospital, and the Ford Motor Company.

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Preparation

Proper preparation to enter a program in biology includes a solid high school background in biology, chemistry, physics and math, as well as good written and oral communication skills.

Courses

100	Principles of Biology
101	Principles of Biology Laboratory
103	Anatomy and Physiology I
105	Anatomy and Physiology II
130	Introduction to Organismal and Environmental Biology
140	Introduction to Molecular and Cellular Biology
290	Topics on Biology and Society
291	Biology and Society Laboratory
301	Cell Biology
303	Comparative Animal Physiology
304	Ecology
306	General Genetics
307	General Genetics Laboratory
309	Introduction to Mycology
310	Histology
311	Embryology
312	Comparative Anatomy of Vertebrates
313	Plant Taxonomy and Systematics
315/515	Aquatic Ecosystems
320	Field Biology
324	Invertebrate Zoology
326	Environmental Management
333	Plant Biology
335	Plant Physiology
350	Introduction to Neurobiology
352	Endocrinology
353	Ornithology
360	Population Genetics and Evolution
370	Principles of Biochemistry
380	Epidemiology
385	Microbiology
390	Topics in Biology
390D	Behavioral Biology
390E	Biology of Spiders
390F	Plant Ecology
390H	Human Physiology
405	Applied and Environmental Microbiology
406	Microbial Genetics
410	Diversity in Health Care
414	Limnology
419/519	Behavioral Biology
420	Advanced Field Ecology
440	Microbial Genetics and Physiology Laboratory
450	Virology
452/552	Medical and Environmental Toxicology
455	Immunology
459	Pathogenic Microbiology
470	Biochemistry I
471	Biochemistry II
472	Biochemistry Laboratory I
473	Biochemistry Laboratory II
474	Molecular Biology
485	Physiology of Microorganisms
489	Origins of Biological Science
490	Seminar in Biology
495	Off-Campus Research Participation
497	Seminar in Biology
498	Independent Study in Biology
499	Laboratory in Biological Research
514	Applied Ecology
545	Restoration Ecology
561	Advances in Cell Biology

For More Information

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