

Biology ! College of Science & Mathematics

About the Program

Overview

The major in Biology is designed to provide students with fundamental concepts, as well as theoretical and practical aspects unique to the field.

Students are prepared for advanced study in graduate schools and/or for employment in various settings. The major also offers excellent preparation for teaching biology at the secondary level.

Unique features

- Scholarly instructors available to work with the student in both the classroom and laboratory
- Provide preparation for research careers, graduate studies, and professional studies
- Opportunity for cooperative education
- Provides varied laboratory experiences

Plan of Study - Bachelor's Degree

Biology Major (33 s.h.)

Required Major Courses:

BIO 1030	General Biology I	4 s.h.
BIO 1040	General Biology II	4 s.h.
BIO 2260	Microbiology	4 s.h.
BIO 2430	Anatomy & Physiology I	3 s.h.
BIO 2440	Anatomy & Physiology II	3 s.h.
BIO 3010	Genetics	4 s.h.
BIO 3210	General Ecology	3 s.h.
BIO 4950	Senior Seminar	2 s.h.
	Major Electives	<u>6 s.h.</u>
		33 s.h.

Required Support Courses:

CHM 1110	General Chemistry I	4 s.h.
CHM 1120	General Chemistry II	4 s.h.
MTH 1210	Precalculus	5 s.h.
or MTH 2510	Calculus with Analytic Geometry I	5 s.h.
MTH 2350	Probability & Statistics	3 s.h.
PHY 2530	General Physics I	4 s.h.
PHY 2540	General Physics II	<u>4 s.h.</u>
		24 s.h.

NSC 2160 Earth Sciences (4 s.h.) required for Secondary Education Certification.

A chemistry minor and a cooperative education placement are recommended.

Plan of Study - Minor

Biology Minor (20 s.h.)

Required Minor Courses:

BIO 1030	General Biology I	4 s.h.
BIO 1040	General Biology II	4 s.h.
BIO 2240	Basic Human Physiology	4 s.h.
BIO 2260	Microbiology	4 s.h.
BIO 3010	Genetics	<u>4 s.h.</u>
		20 s.h.

Career Options

- Research
- Education
- Environmental studies
- Hospitals
- Graduate studies
- Professional schools

Teacher Certification

The major was developed in accordance with the guidelines (1983) of the National Science Teacher Association for the preparation of science teachers. Teacher certification available. Contact the Education Department at 734/432-5655 or 432-5647.



For Admissions Information

Office of Admissions
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734/432-5339
Fax: 734/432-5393
800-852-4951
TTY: 734/432-5643
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For Program Information

Dr. James Copi, Chair
Biological & Health Sciences
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See Advisor/Admissions Office for current information.

Madonna University guarantees the right to equal educational opportunity without discrimination because of race, religion, sex, national origin, age, or disabilities.

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Selected Course Offerings

General Biology I, II

Fundamental biological principles and problems as they apply to molecular, cellular, organismic, and ecological levels of the plant and animal worlds.

Microbiology

Fundamental principles of microbiology with emphasis on the biology of bacteria and other microbes (metabolism, genetics, growth and death); their ecological relationships in natural and controlled environments and the interactions of pathogenic microorganisms and their human and animal hosts.

Anatomy and Physiology I, II

Study of the structure and function of the ten major body systems. Supplementary topics include: the cell, fluids and electrolytes, and acid-base balance.

Genetics

Principles of genetic theory with its application to plants, animals, microorganisms, and humans and techniques (including statistics).

General Ecology

Study of the principles of ecological interdependence and interaction between plants and animals with each other and with their environment. An overview of research methods used in field studies complements theoretical concepts in lecture.

Immunology

Basic principles of immunology and serology with emphasis on the nature of antigens and antibodies, the theories of the immune response and the application of principles in hypersensitivity, tumor and transplantation immunology. Theory and practice of serological techniques including immuno-precipitation, agglutination and complement-mediated cell lysis.

Medical Mycology

Studies in the isolation and identification of fungi with emphasis on the fungi of medical importance.

Clinical Bacteriology

Study of the qualitative and quantitative aspect of bacteriology in relation to diseases as found in humans. Methods of detection, isolation, enumeration, toxin production and techniques in the identification of pathogenic bacteria.

Senior Seminar

Preparation of a review paper and oral presentation. Taken by students with senior status as a requirement for graduation.

The Faculty

James Copi, *Chairperson, Biological & Health Sciences* (B.S., Michigan State University; M.S., Ph.D., Wayne State University)

Ellen Oliver Smith, *College of Science & Mathematics* (B.S., Ph.D., Louisiana State University)

James Wendt, *Biology* (B.S., M.S., Eastern Michigan University; M.T. (A.S.C.P.), Registered Medical Technologist)