

Microbiology

Department Information

- **Department Location:**
Van Es Hall
- **Department Phone:**
701-231-7667
- **Department Web Site:**
www.ndsu.edu/micro/
- **Credential Offered:**
B.S.
- **Official Program Curriculum:**
bulletin.ndsu.edu/undergraduate/program-curriculum/microbiology/

Microbiology is a fundamental biological science concerned with bacteria, viruses and other microbes. Some of the most important scientific discoveries have been made by microbiologists. Since 1910, approximately one-third of the Nobel Prizes in medicine and physiology have been awarded to microbiologists. The discipline covers a wide spectrum of specialized interest areas that show how microbes affect human and animal health, agriculture, our environment, food technology and safety, and the biotechnology industry. Microbiology prepares students for a wide range of important career opportunities.

In recent years, the field of microbiology has had a major impact upon virtually all other scientific disciplines. For this reason, students who choose to major in microbiology often minor in biotechnology, chemistry or food safety. Students who choose to major in other fields may find it advantageous to minor in microbiology.

High School Preparation

Students will find courses in science and mathematics, such as algebra, biology, physics and chemistry, to be very helpful in preparing for a major in microbiology.

The Curriculum

During the first year, students in microbiology take basic college courses in English, chemistry, biology or zoology and mathematics. The curriculum over the next three years includes advanced courses in microbiology and the life sciences. These courses include pathogenic microbiology, virology, immunology, parasitology, microbial genetics, food microbiology, microbial ecology and bacterial physiology. Students majoring in microbiology can enhance their understanding of applied microbiology and infectious disease by taking courses in epidemiology and food safety offered through other programs.

The Faculty and Facilities

The teaching faculty offer expertise and experience in nearly all areas of microbiology. Additionally, faculty are active researchers and devoted research mentors. Our undergraduates frequently have opportunities to perform cutting edge research in nationally-funded laboratories.

The Department of Microbiological Sciences, located in Van Es Hall, has well-equipped teaching and research laboratories. Several courses are taught in the dedicated STEM education building, A. Glenn Hill Center.

Qualified upper class students majoring in microbiology may pursue individualized study and research under the supervision of one of the faculty members.

Post Graduate Opportunities

Pre-Professional. The microbiology major is excellent preparation for professional school including medical, veterinary, dental, optometry, and physician assistant programs.

Graduate School. The microbiology major emphasizes experiential learning in coursework and research laboratories that provides the foundation to be successful in graduate school.

Career Opportunities

Graduates may seek employment in the health sciences, biomedical industries, biotechnology, agricultural biosystems, food industries, pharmaceutical industries and government agencies. In these careers, graduates may identify new emerging diseases; develop diagnostic tests, new medicines and vaccines; work in departments of public health or hospital laboratories to ensure a safe food supply; or work in academic or private research laboratories. Microbiologists work in government agencies such as the National Institutes of Health and the Environmental Protection Agency. Many microbiologists are teachers and professors.

Please note this is a sample plan of study and not an official curriculum. Actual student schedules for each semester will vary depending on start year, education goals, applicable transfer credit, and course availability. Students are encouraged to work with their academic advisor on a regular basis to review degree progress and customize an individual plan of study.

First Year			
Fall	Credits	Spring	Credits
AGRI 189	1	BIOL 151	3
CHEM 121	3	BIOL 151L	1
CHEM 121L	1	CHEM 122	3
BIOL 150	3	CHEM 122L	1
BIOL 150L	1	ENGL 120	3
ENGL 110	4	Gen Ed Social and Behavioral/ Global Perspectives	3
MATH 105 ^{MATH 107 or MATH 146 also acceptable}	3	Gen Ed Wellness	2
			16
Second Year			
Fall	Credits	Spring	Credits
COMM 110	3	MICR 352	3
CHEM 341	3	MICR 352L	2
CHEM 341L	1	PLSC 315	3
STAT 330	3	PLSC 315L	1
MICR 350	3	CHEM 342	3
MICR 350L	2	Gen Ed Social and Behavioral/ Global Perspectives	3
			15
Third Year			
Fall	Credits	Spring	Credits
BIOC 460	3	PHYS 212	3
BIOC 460L	1	PHYS 212L	1
PHYS 211	3	BIOC 461	3
PHYS 211L	1	Microbiology Elective	6
Microbiology Elective	3	Gen Ed Humanities and Fine Arts/ Cultural Diversity	3
Gen Ed Humanities and Fine Arts/ Cultural Diversity	3		
			14
Fourth Year			
Fall	Credits	Spring	Credits
MICR 354	3	MICR 480	3
MICR 482	3	MICR 486	2
Microbiology Elective	9	Microbiology Elective	3
		Free Elective	5
			15

Total Credits: 120