

Microbiology

Department Information

- **Department Location:**
150 Van Es Hall
- **Department Phone:**
701-231-7512
- **Department Web Site:**
www.ndsu.edu/microbiology/ (<http://www.ndsu.edu/microbiology/>)
- **Credential Offered:**
B.S.; Minor
- **Official Program Curriculum:**
catalog.ndsu.edu/undergraduate/program-curriculum/microbiology/ (<http://catalog.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.

Transfer student PREPARATION

Transfer students are strongly advised to take transferable intro biology and chemistry courses in preparation for upper-level science courses at NDSU.

The Curriculum

During the first year, students in microbiology take basic college courses in English, chemistry, biology, and mathematics. The curriculum over the next three years includes advanced courses in microbiology and the life sciences. These courses include microbial physiology, microbial genetics, virology, immunology, and microbial ecology. Students majoring in microbiology can enhance their understanding of applied microbiology and infectious disease by taking courses such as pathogenic microbiology, clinical parasitology, food microbiology, and microbial genomics. Students may choose to minor in programs such as biotechnology, public health, and food safety.

Pathways to success

The department of Microbiological Sciences offers several "Pathways to Success". Depending on your career goals, you may find one of these pathways will enhance your education to meet that goal. We currently have Pathways to Success in: General Microbiology, Pre-Health Careers, Pre-Veterinary careers, Honors, Biotechnology (Double Major), and Accelerated Master's (Public Health or Microbiology).

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 state public health units, the National Institutes of Health (NIH), Centers of Disease Control (CDC), United States Department of Agriculture (USDA), and Environmental Protection Agency (EPA). Many microbiologists are teachers and professors.

Sample Program Guide

IMPORTANT DISCLAIMER: A Sample Program Guide provides an unofficial guide of program requirements and should be used by prospective students who are considering attending NDSU in the future. It is NOT an official curriculum and should NOT be used by current NDSU students for official degree planning purposes. Note that the official curriculum used by current NDSU students can vary from the Sample Program Guide due to a variety of factors such as, but not limited to, start year, education goals, transfer credit, and course availability.

To ensure proper program completion, enrolled students should utilize Degree Map (<https://www.ndsu.edu/registrar/degreemap/>) and Schedule Planner (<https://www.ndsu.edu/onestop/degree-map-and-planning/>) in Campus Connection and consult regularly with their academic advisor to ensure requirements are being met.

First Year			
Fall	Credits	Spring	Credits
MICR 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		3 Gen Ed Social and Behavioral/ Global Perspectives	3
MATH 105 ^{MATH 107 or MATH 146 also acceptable}		3 Gen Ed Wellness	2
		15	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 MICR 452	3
		15	15
Third Year			
Fall	Credits	Spring	Credits
BIOC 460		3 BIOC 461	3
PHYS 211		3 PHYS 212	3
PHYS 211L		1 PHYS 212L	1
MICR 470		3 MICR 480	3
PHIL 111		3 Microbiology Elective	3

	Gen Ed Humanities and Fine Arts/ Cultural Diversity	3
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13 **16**

Fourth Year

Fall	Credits	Spring	Credits
ENGL 324 or 325		3 MICR 486 or HON 489	2
MICR 482		3 Microbiology Elective	3
MICR 475		3 Microbiology Elective	3
MICR 485 or HON 491		1 Free Elective	6
Microbiology Elective		3	
Gen Ed Social & Behavioral Sciences		3	
		16	14

Total Credits: 120