

Microbiology

Department Information

- **Department Location:**
Van Es Hall
- **Department Phone:**
701-231-7512
- **Department Web Site:**
www.ndsu.edu/microbiology/ (<http://www.ndsu.edu/microbiology/>)
- **Credential Offered:**
B.S.
- **Plan Of Study Sample:**
bulletin.ndsu.edu/programs-study/undergraduate/microbiology/#planofstudytext (<http://bulletin.ndsu.edu/programs-study/undergraduate/microbiology/#planofstudytext>)

Major Requirements

Major: Microbiology

Degree Type: B.S.

Minimum Degree Credits to Graduate: 120

University Degree Requirements

1. Satisfactory completion of all requirements of the curriculum in which one is enrolled.
2. Earn a minimum total of 120 credits in approved coursework. Some academic programs exceed this minimum.
3. Satisfactory completion of the general education requirements as specified by the university.
4. A minimum institutional GPA of 2.00 based on work taken at NDSU.
5. At least 36 credits presented for graduation must be in courses numbered 300 or higher.
6. Transfer Students: Must earn a minimum of 60 credits from a baccalaureate-degree granting or professional institution.
 - a. Of these 60, at least 36 must be NDSU resident credits as defined in #7.
 - b. Within the 36 resident credits, a minimum of 15 must be in courses numbered 300 or higher and 15 credits in the major field of study.
7. At least 36 credits must be NDSU resident credits. Resident credits include credits registered and paid for at NDSU.

For complete information, please refer to the Degree and Graduation Requirements (<http://catalog.ndsu.edu/academic-policies/undergraduate-policies/degree-and-graduation/>) section of this Bulletin.

University General Education Requirements

Code	Title	Credits
Communication (C)		12
ENGL 110	College Composition I	
ENGL 120	College Composition II	
COMM 110	Fundamentals of Public Speaking	
Upper Division Writing [†]		
Quantitative Reasoning (R) [†]		3
Science and Technology (S) [†]		10
Humanities and Fine Arts (A) [†]		6
Social and Behavioral Sciences (B) [†]		6
Wellness (W) [†]		2
Cultural Diversity (D) ^{*†}		
Global Perspectives (G) ^{*†}		
Total Credits		39

* May be satisfied by completing courses in another General Education category.

† General education courses may be used to satisfy requirements for both general education and the major, minor, and program emphases, where applicable. Students should carefully review major requirements to determine if specific courses can also satisfy these general education categories.

- A list of university approved general education courses and administrative policies are available here (<http://catalog.ndsu.edu/academic-policies/undergraduate-policies/general-education/#genedcoursestext>).

Major Requirements

A grade of 'C' or better is required for the microbiology core and elective requirements.

Code	Title	Credits
Required Courses for Microbiology Major		
MICR 350 & 350L	General Microbiology and General Microbiology Lab	5
MICR 352 & 352L	General Microbiology II and General Microbiology Lab II	5
MICR 452	Microbial Ecology	3
MICR 470	Basic Immunology	3
MICR 475	Virology	3
MICR 480	Microbial Physiology	3
MICR 482	Microbial Genetics	3
MICR 485 or HON 491	Capstone Experience in Microbiology - Experimental Design (HON 491 can substitute) Seminar	1
MICR 486 or HON 489	Capstone Experience in Microbiology - Research Project (HON 489 can substitute) Senior Thesis	2
Microbiology Electives - Must include at least one laboratory course		12
No more than 3 credits may come from courses numbered 371-399 or 491-499 to fulfill this requirement.		
MICR 379 or MICR 492	Study Tour Abroad Study Abroad	
MICR 394	Individual Study	
MICR 453	Food Microbiology	
MICR 460	Pathogenic Microbiology	
MICR 463	Clinical Parasitology	
MICR 481	Microbial Genomics with Computational Laboratory	
MICR 491	Seminar	
MICR 493	Undergraduate Research	
MICR 494	Individual Study	
MICR 496	Field Experience	
BIOC 483	Cellular Signal Transduction Processes and Metabolic Regulations	
BIOC 487	Molecular Biology of Gene Expression	
BIOL 359	Evolution	
BIOL 370	Cell Biology	
MLS 435	Hematology	
PH 474	Epidemiology	
PLSC 431	Intermediate Genetics	
SOIL 351	Soil Ecology	
Laboratory Courses - Must include at least one from the following as part of the 12 credits of microbiology electives:		
BIOC 474	Methods of Recombinant DNA Technology	
MICR 445	Animal Cell Culture Techniques	
MICR 460L	Pathogenic Microbiology Laboratory	
MICR 471	Immunology and Serology Laboratory	
Related Requirements for the Microbiology Major		
MICR 189	Skills for Academic Success ¹	1

PHIL 111	Professional Responsibility and Ethics	3
BIOL 150 & 150L	General Biology I and General Biology I Laboratory	4
BIOL 151 & 151L	General Biology II and General Biology II Laboratory	4
CHEM 121 & 121L	General Chemistry I and General Chemistry I Laboratory (May satisfy general education category S)	4
CHEM 122 & 122L	General Chemistry II and General Chemistry II Laboratory (May satisfy general education category S)	4
CHEM 341 & 341L	Organic Chemistry I and Organic Chemistry I Laboratory	4
CHEM 342	Organic Chemistry II	3
BIOC 461	Foundations of Biochemistry and Molecular Biology II	3
BIOC 460	Foundations of Biochemistry and Molecular Biology I	3
PHYS 211 & 211L	College Physics I and College Physics I Laboratory (May satisfy general education category S)	4
PHYS 212 & 212L	College Physics II and College Physics II Laboratory (or higher (May satisfy general education category S)	4
PLSC 315 & 315L	Genetics and Genetics Laboratory (May satisfy general education category S)	4
STAT 330	Introductory Statistics (May satisfy general education category R)	3
Select one of the following or higher level math:		3-4
MATH 105	Trigonometry	
MATH 107	Precalculus	
MATH 146	Applied Calculus I	

Total Credits **91**

¹ MICR189 is only required for first-time, first-year students--A first-time, first-year student is defined as a student who has not yet completed a college course as a college student. Students that are not first-time, first-year students that either transfer into the university or change their major are not required to take MICR189.

Degree Requirements and Notes

- A cumulative 2.50 GPA is required for graduation.

Minor Requirements

Minor: Microbiology

Required Credits: 16

Code	Title	Credits
Required Courses		
MICR 350 & 350L	General Microbiology and General Microbiology Lab	5
Elective Courses: Select 11 credits from the following: 11		
No more than 3 credits may come from courses numbered 491-499 to fulfill this requirement.		
MICR 352	General Microbiology II	
MICR 379	Study Tour Abroad	
MICR 445	Animal Cell Culture Techniques	
MICR 452	Microbial Ecology	
MICR 453	Food Microbiology	
MICR 460 or MICR 450	Pathogenic Microbiology Infectious Disease Pathogenesis	
MICR 460L or MICR 450L	Pathogenic Microbiology Laboratory Infectious Disease Pathogenesis Laboratory	
MICR 463	Clinical Parasitology	

MICR 470	Basic Immunology
MICR 471	Immunology and Serology Laboratory
MICR 472	Clinical Immunology
MICR 474	Epidemiology (see SAFE)
MICR 475	Virology
MICR 480	Microbial Physiology
MICR 481	Microbial Genomics with Computational Laboratory
MICR 482	Microbial Genetics
MICR 491	Seminar
MICR 494	Individual Study
MICR 496	Field Experience
MICR 499	Special Topics

Total Credits**16**

Minor Requirements and Notes

- A minimum of 8 credits must be taken at NDSU.
- Students must earn a 2.50 minimum GPA for the minor with a grade of 'C' or better in the courses used to satisfy the minor requirements.