

Microbiology Doctorate

Department Information

- **Program Information:**
ndsu.edu/programs/graduate/microbiology (<http://ndsu.edu/programs/graduate/microbiology/>)
- **Department Web Site:**
ndsu.edu/microbiology/ (<http://ndsu.edu/microbiology/>)
- **Application Deadline:**
January 15 for fall
- **Credential Offered:**
Ph.D.
- **English Proficiency Requirements:**
TOEFL iBT 81 (Speaking 23, Writing 21); IELTS 7 (Speaking 6, Writing 6); Duolingo 115

Apply Now (https://ndsugrad.my.site.com/Application/TX_SiteLogin/?startURL=/Application/TargetX_Portal__PB)

The Ph.D. program in Microbiology encompasses many subdisciplines, including microbial ecology and evolution, virology, vaccine development, food microbiology, soil microbiology, plant-microbe and animal-microbe interactions, microbiome research, biofilm research, immunology, host-pathogen interactions, and discipline-based education research. The program trains students in the foundation of knowledge, process of inquiry, and philosophy of microbiology. It breaks with traditional programs by focusing training on seven well-defined learning outcomes that can be attained with or without supporting coursework. This includes outcomes for professional, ethical and civic development. Under this system, we expect that a graduating doctoral student will be able to:

1. Demonstrate professional and ethical behavior consistent with the expectations of the discipline.
2. Use and apply appropriate discipline knowledge, concepts, and theoretical frameworks.
3. Conduct scholarly inquiry relevant to societal challenges and the field of study.
4. Demonstrate proficiency with a variety of classical and modern techniques by collecting and documenting reproducible and publish quality data through completion of experiments.
5. Critically analyze, write high-quality technical documents, and communicate scientific content and research results to chosen audiences. Contribute significantly (first-authorship) to scientific journal articles.
6. Initiate and manage collaboration in ways that enhance the output of the project.
7. Display professional skills in personal effectiveness to be competitive in the job market.
8. Engage and initiate activities that display leadership, citizenship, and inclusiveness.

Required coursework in the typical program (five years) is 8-14 credit hours, with the remaining 76-82 credits customizable to the student's training needs. In the absence of didactic course requirements, the program holds students accountable for year-over-year progress toward the learning goals via annual assessments of student progress by the mentor and research advisory committee and a qualifying exam to assess microbiological knowledge.

Code	Title	Credits
MICR 701	Introduction to Graduate Research	1-3
MICR 720	Scientific Integrity	1
MICR 790	1 credit per year	3-5
MICR 893	(Annual Portfolio Review) ¹ credit per year	3-5
MICR 899		>30

Admission and Application Requirements

Graduate School admission and application requirements are found on the Admission Information (<https://catalog.ndsu.edu/past-bulletin-archive/2025-2026/graduate/admission-information/>) page. In addition to these requirements, the following are required:

- Evidence of a strong academic record in the biological sciences.
- The statement of purpose should address each of the following:
 - The degree you are seeking (Comprehensive study-based M.S., Thesis-based M.S., or PhD).
 - An explanation of how obtaining a graduate degree in our program fits your career goals.

- A description of the qualities you possess that will contribute to your success.
- A description of any relevant experiences you have had. If you have had research experience, it is important to include a letter of recommendation from your research adviser. (Particularly important for Thesis-based M.S. and Ph.D. applicants.
- A list of the areas of research in the department that interest you and identifying specific researchers is helpful. (Particularly important for Thesis-based M.S. and Ph.D. applicants)
- The Department of Microbiological Sciences at North Dakota State University is committed to fostering a welcoming and dynamic learning environment that prepares students for academic and professional success. Graduate education benefits from a wide range of perspectives, experiences, and problem-solving approaches. Please provide a statement describing any experiences, challenges, or perspectives that have shaped your journey and how they will contribute to your graduate studies and the broader learning community.

Admission Standards

Applicants are evaluated in each of five dimensions that are expected to impact performance as a graduate student:

1. Academic preparation
 - a. Prior courses/degrees
 - b. Communication
 - c. English Proficiency - if applicable
2. Scholarly Potential
 - a. Motivation for graduate study
 - b. Prior Experience
3. Socio-Emotional Competencies
 - a. Self-Appraisal
 - b. Long term Goals/Accomplishments
4. Alignment with Program
 - a. Alignment with Faculty research
 - b. Alignment with program training
5. Alignment with Values of the department

Please see the Microbiology website (<https://www.ndsu.edu/agriculture/academics/academic-units/microbiological-sciences/>) for more details on the admissions process and Frequently Asked Questions.