PH.D. IN MICROBIOLOGY

Requirements
Effective Fall 2026

A minimum of 72 semester credits and a high-quality research project are required. At least 16 credits must be earned in graduate-level (500+) didactic coursework. Of those 16 credits, at least 13 must be Department of Microbiology, Immunology, and Pathology courses (i.e., courses with the MIP prefix). The remaining 56 credits may be in special studies, graduate seminars, topics, research and dissertation credits.

Code	Title	Credits
Required Courses:		
MIP 700	Topics in Microbiology [1]	4
MIP 792A	Seminar: Research/Graduate [2]	8
MIP 799	Dissertation [3]	1
MIP 798	Research [3]	1
MIP 784	Supervised College Teaching [4]	4
Select one course from the following:		1
GRAD 544	Ethical Conduct of Research	
GRAD 575/ NSCI 575	Ethical Issues in Big Data Research	
MIP 554	Research Policies and Regulations	
A total of 30 credits can be applied from an MS or DVM degree		30
Electives (Select a minimum of 16 credits from the lists below): [5]		16-23
General Electives:		
MIP 470	Graduate Fellowship Proposal Preparation	
MIP 540	Fundamentals of Biosafety and Biosecurity	
MIP 643	Grant Writing for Microbiology/Pathology	
MIP 666	Writing Scientific Manuscripts	
MIP 710	Research Team Mentoring	
Virology Electives:		
MIP 533/VS 533	Epidemiology of Infectious Diseases/ Zoonoses	
MIP 543	RNA Biology	
Bacteriology Electives:		
MIP 550	Microbial and Molecular Genetics Laboratory	
MIP 573A	Bacterial Pathogenesis: Introduction to Mechanisms	
MIP 573B	Bacterial Pathogenesis: Mechanisms and Lifestyle	
MIP 573C	Bacterial Pathogenesis: Evading Host Defenses	
Vector Biology Electives:		
MIP 535	Vector Collection and Identification Methods	
Molecular and Genomic Approaches Electives:		
MIP 543	RNA Biology	
MIP 545	Microbial Metagenomics/Genomics Data Analysis	
MIP 565/BZ 565	Next Generation Sequencing Platform/ Libraries	
MIP 570	Functional Genomics	
Immunology Electives:		
MIP 525	Flow Cytometry for Immunology	
MIP 542	Pillars of Immunology	
MIP 651	Immunobiology	
MIP 730/ ERHS 730	Principles of Flow Cytometry & Cell Sorting	
Pathology Electives:		
MIP 675	Advanced Bioanalytic Pathology	
MIP 765	Comparative Neuropathology	
MIP 766	Cytopathology–Clinical Pathology	
MIP 767	Advanced General Pathology	
MIP 768	Advanced Clinical Pathology	
MIP 778	Pathobiology of Laboratory Animals	
MIP 779	Laboratory Animal Pathology Rotation	
Courses Offered by Other Departments:		
BC 563	Molecular Genetics	
BC 565	Molecular Regulation of Cell Function	
BIOM 525/ MECH 525	Cell and Tissue Engineering	
BIOM 550	STEM Communication	
BMS 500	Mammalian Physiology I	
BMS 501	Mammalian Physiology II	
DSCI 510	Linux as a Computational Platform	
DSCI 511	Genomics Data Analysis in Python	
DSCI 512	RNA-Sequencing Data Analysis	
ERHS 510/VS 510	Cancer Biology	
ERHS 535	R Programming for Research	
ERHS 611	Cancer Genetics	
STAR 511	Design and Data Analysis for Researchers I	
STAR 512	Design and Data Analysis for Researchers II	
Program Total Credits:		**72**

A minimum of 72 credits are required to complete this program.

1 MIP 700 should be taken for a minimum of 4 credits. Exemptions and substitutions maybe granted with written approval from the associate department head of graduate education.

2 MIP 792A should be taken every Fall and Spring semesters while in the program for a minimum of 8 credits. Exemptions and substitutions maybe granted with written approval from the associate department head of graduate education.

3 MIP 798 and MIP 799 each should each be taken for a minimum of 1 credit.

4 **MIP 784** a minimum of 4 credits is required only for students that are on graduate teaching assistantships.

5 A minimum of 13 credits must be regular courses with the MIP subject code prefix. Regular course work is defined as courses other than independent or group studies, thesis/dissertation credits, supervised college teaching, unique titled courses offered through the Division of Continuing Education, and any courses graded pass/fail.

Non-Coursework Requirements:

Seminar Participation Requirement

Students are required to register for the Department Seminar (MIP 792A) and regularly attend seminars during the fall and spring semesters. Each graduate student is required to present in their second and fourth years in the program. A student in the combined residency-PhD program is required to present their fourth and sixth years in the program. Exemptions or waivers may be granted with written approval from the advisor and ADH of Graduate Education.

Preliminary Examination

The PhD student gains admission to candidacy by passing a comprehensive preliminary examination. The preliminary examination consists of preparation of a written research proposal and an oral exam that assesses foundational knowledge and research readiness. The preliminary examination is to be administered by the end of the 5^{th} semester in the graduate program. A student in the Combined Residency-PhD program is expected to hold their preliminary exam by their 8^{th} semester in the program. Extensions may be granted with written approval from the advisor and ADH of Graduate Education

Dissertation Requirement

Students are required to prepare a comprehensive dissertation based upon independent research conducted during the program of study that contributes new knowledge to the field. Requires approval of a research proposal, data collection/analysis, and formal oral defense.

Oral Defense Presentation

Each candidate for a doctoral degree must pass an oral final examination at least five weeks before the expected graduation. This is a public presentation to present research findings with a Q&A session.

Graduate Student Organization Participation and Well-being Check

All enrolled graduate students are automatically members of the departmental graduate student organization and are assigned peer mentors when they enter the program. All incoming students set up a meeting each semester in their first year to discuss their well-being and assess their progress in integrating into the program, and to alleviate any possible hurdles that might prevent them from doing so.