MICROBIOLOGY, IMMUNOLOGY, & INFECTIOUS DISEASE B.S.

Microbiology is the study of microorganisms including bacteria, fungi, viruses, and protozoa. The Microbiology, Immunology, & Infectious Disease major emphasizes microbial structure and function as well as interactions with human health. This is a graduate prep program and is appropriate for students interested in research careers in academia or private or government laboratories. It is also an excellent concentration for pre-medical sciences students.

General Degree Requirements

To earn a baccalaureate degree, all students must complete successfully, in addition to any other requirements, the University of Montana General Education Requirements. Please refer to the General Education Requirements page (https://catalog.umt.edu/academics/general-education-requirements/) for more information.

Additional requirements for graduation can be found on the Degree/Certificate Requirements for Graduation page (https://catalog.umt.edu/academics/graduation-requirements/).

Unless otherwise noted in individual program requirements, a minimum grade point average of 2.00 in all work attempted at the University of Montana-Missoula is required for graduation. Please see the Academic Policies and Procedures page (https://catalog.umt.edu/academics/policies-procedures/) for information on how your GPA is calculated.

Courses taken to satisfy the requirements of a major, minor, or certificate program must be completed with a grade of C- or better unless a higher grade is noted in the program requirements.

Bachelor of Science - Microbiology, Immunology, & Infectious Disease

Course Requirements

Code	Title	Hours
Biology/Microbiology Lower-Division Core		
Complete all of the following courses:		
BIOB 160	Principles of Living Systems	3
BIOB 161N	Principles of Living Systems Lab	1
BIOB 170N	Principles of Biological Diversity	3
BIOB 171N	Principles of Biological Diversity Lab	2
BIOB 260	Cellular and Molecular Biology	4
BIOB 272	Genetics and Evolution	4
Upper-Division Microbiology Core Courses		
Complete all of the following courses:		
BIOB 410	Immunology	3
BIOM 360	General Microbiology	3
BIOM 361	General Microbiology Lab	2
BIOM 410	Microbial Genetics	3
BIOM 411	Experimental Microbial Genetics Lab	1
BIOM 415	Microbial Diversity Ecology & Evolution	3
BIOM 450	Microbial Physiology	3
BIOM 451	Microbial Physiology Lab	1
Advanced Infectious Disease Elective		
Complete one of the following courses:		3-4
BIOM 402	Pathogenic Microbes	
BIOM 427 & BIOM 428	General Parasitology and General Parasitology Lab	
BIOM 435	Virology	
BIOM 460	Ecology of Infectious Diseases	
Biochemistry		
Complete either one semester or one year of Biochemistry courses:		4-6
BCH 380	Biochemistry	
or BCH 480 & BCH 482	Advanced Biochemistry I and Advanced Biochemistry II	
Additional Upper-Division Depth Courses in Microbiology		
Complete 6 credits of the following courses. Infectious Disease electives may be counted here as long as the are not already applying to the Infectious Disease Elective requirement.		6
BIOB 411	Immunology Laboratory	
BIOB 483	Phylogenics and Evolution	
BIOB 486	Genomics	
BIOM 327	Vector-Borne Diseases: Public Health Perspectives	
BIOM 402 & BIOM 403	Pathogenic Microbes and Pathogenic Microbes Laboratory	
BIOM 420	Host-Microbe Interactions	
BIOM 427 & BIOM 428	General Parasitology and General Parasitology Lab	
BIOM 435	Virology	
BIOM 460	Ecology of Infectious Diseases	
BIOM 490	Advanced Undergraduate Research	
Mathematics & Computer Science		
Complete two of the following courses. Only one may be in calculus.		7-8
CSCI 150	Introduction to Computer Science	
M 162	Applied Calculus	
or M 171	Calculus I	
STAT 216	Introduction to Statistics	
Chemistry		
CHMY 141N & CHMY 142N	College Chemistry I and College Chemistry I Lab	5
CHMY 143N & CHMY 144N	College Chemistry II and College Chemistry II Lab	5
CHMY 221 & CHMY 222	Organic Chemistry I and Organic Chemistry I Lab	5
CHMY 223 & CHMY 224	Organic Chemistry II and Organic Chemistry II Lab	5
Physics		
Complete one of the following Physics sequences:		10
Algebra- and Trigonometry-based Physics:		
PHSX 205N & PHSX 206N	College Physics I and College Physics I Laboratory	
PHSX 207N & PHSX 208N	College Physics II and College Physics II Laboratory	

Calculus-based Physics:		
PHSX 215N & PHSX 216N	Fundamentals of Physics with Calculus I and Physics Laboratory I with Calculus	
PHSX 217N & PHSX 218N	Fundamentals of Physics with Calculus II and Physics Laboratory II with Calculus	
Writing in the Disciplines Requirement		
To complete the General Education Requirement for Writing in the Disciplines, Microbiology, Immunology & Infectious Disease students can either take a complete writing course (in or outside of DBS) or partial writing courses (2-3) within the DBS Distributed Model.		3
Total Hours		**89-93**

[1] The lower-division core should be completed before attempting most upper-division major courses. AP Biology credit with a score of 3 may be substituted for either BIOB 160/BIOB 161N or BIOB 170N/BIOB 171N.

Writing in the Disciplines Distributed Model Courses for Biological Sciences

Code	Title	Hours
1/3 Writing in the Disciplines Courses		
BCH 482	Advanced Biochemistry II	3
BIOB 410	Immunology	3
BIOB 425	Advanced Cellular & Molecular Biology	3
BIOB 483	Phylogenics and Evolution	3
BIOE 371	General Ecology Lab (equivalent to 271)	2
BIOE 403	Comparative Vertebrate Anatomy	4
BIOE 428	Freshwater Ecology	5
BIOH 447	Genes and Development Lab	3
BIOM 327	Vector-Borne Diseases: Public Health Perspectives	3
BIOM 435	Virology	3
BIOO 470	Ornithology	4
BIOO 475	Mammalogy	4
WILD 470	Conservation of Wildlife Populations	4
2/3 Writing in the Disciplines Courses		
BCH 486	Biochemistry Research Lab	3
BCH 499	Senior Thesis/Capstone	3-6
BIOB 411	Immunology Laboratory	2
BIOB 499	Undergraduate Thesis	3-6
BIOE 448	Terrestrial Plant Ecology	4
BIOE 485	Plant Evolution	3
BIOM 499	Undergraduate Thesis	3-6
Full Writing in the Disciplines Courses		
BIOH 462	Principles of Medical Physiology	3
BIOM 420	Host-Microbe Interactions	3

Four Year Plan

Course	Title	Hours
Freshman		
Autumn		
BIOB 160 & BIOB 161N	Principles of Living Systems and Principles of Living Systems Lab	4
CHMY 141N & CHMY 142N	College Chemistry I and College Chemistry I Lab	5
M 162 or M 171	Applied Calculus or Calculus I	4
BIOB 194	Your Future in Biology	1
	Hours	**14**
Spring		
BIOB 170N & BIOB 171N	Principles of Biological Diversity and Principles of Biological Diversity Lab	5
CHMY 143N & CHMY 144N	College Chemistry II and College Chemistry II Lab	5
WRIT 101	College Writing I	4
General Education Requirement		3
	Hours	**17**
Sophomore		
Autumn		
BIOB 260	Cellular and Molecular Biology	4
CHMY 221 & CHMY 222	Organic Chemistry I and Organic Chemistry I Lab	5
BIOM 360 & BIOM 361	General Microbiology and General Microbiology Lab	5
Elective		1
	Hours	**15**
Spring		
BIOB 272	Genetics and Evolution	4
CHMY 223 & CHMY 224	Organic Chemistry II and Organic Chemistry II Lab	5
CSCI 150	Introduction to Computer Science [1]	3
Intermediate Writing Course		3
	Hours	**15**
Junior		
Autumn		
BCH 480	Advanced Biochemistry I [1]	3
PHSX 205N & PHSX 206N	College Physics I and College Physics I Laboratory [1]	5
BIOM 327	Vector-Borne Diseases: Public Health Perspectives [1]	3
General Education Requirement		3
	Hours	**14**
Spring		
BCH 482	Advanced Biochemistry II [1]	3
BIOM 415	Microbial Diversity Ecology & Evolution	3
PHSX 207N & PHSX 208N	College Physics II and College Physics II Laboratory	5
Elective		4
	Hours	**15**
Senior		
Autumn		
BIOB 410	Immunology	3
BIOM 450 & BIOM 451	Microbial Physiology and Microbial Physiology Lab (offered odd fall)	4
General Education Requirement		3
Upper Division Elective		5
	Hours	**15**
Spring		
BIOM 410 & BIOM 411	Microbial Genetics and Experimental Microbial Genetics Lab (offered even spring)	4
BIOM 402	Pathogenic Microbes [1]	3
BIOM 435	Virology [1]	3
General Education Requirement		6
	Hours	**16**
	Total Hours	**121**

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[1] *Indicates you have a choice of alternative courses for degree completion. See catalog, Degree Works, or your advisor for other options.*