

MICROBIOLOGY B.S.

Bachelor of Science - Microbiology

College of Humanities & Sciences

Degree Specific Credits: 89-93

Required Cumulative GPA: 2.0

Catalog Year: 2018-2019

Note: Microbiology is the study of microorganisms including bacteria, fungi, viruses, and protozoa. This general microbiology concentration emphasizes microbial structure and function as well as interactions with humans. 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 Education Requirements

Information regarding these requirements can be found in the General Education Section (<http://catalog.umt.edu/academics/general-education-requirements>) of the catalog.

Summary

Code	Title	Hours
	Biology/Microbiology Lower-Division Core	17
	Upper-Division Microbiology Core Courses	16
	Additional Upper-Division Major Courses Required for Microbiology	14-18
	Biochemistry	
	Additional Upper-Division Depth Courses in Microbiology	
	Required Courses Outside of the Major	42
	Mathematics	
	Chemistry	
	Physics	
	Advanced College Writing Requirement	
	Total Hours	89-93

Biology/Microbiology Lower-Division Core

Note: 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 160N/BIOB 161N or BIOB 170N/BIOB 171N.

Code	Title	Hours
	Complete all of the following courses:	
BIOB 160N	Principles of Living Systems	3
BIOB 161N	Prncpls of Living Systems Lab	1
BIOB 170N	Prncpls Biological Diversity	3
BIOB 171N	Prncpls Biological Dvrsty Lab	2
BIOB 260	Cellular and Molecular Biology	4
BIOB 272	Genetics and Evolution	4
	Total Hours	17

Minimum Required Grade: C-

Upper-Division Microbiology Core Courses

Code	Title	Hours
	Complete all of the following courses:	
BIOM 360	General Microbiology	3
BIOM 361	General Microbiology Lab	2
BIOM 410	Microbial Genetics	3
BIOM 411	Exprmntl Microbial Genetcs Lab	1
BIOM 415	Microbial Dvrsty Eclgy & Evltn	3
BIOM 450	Microbial Physiology	3
BIOM 451	Microbial Physiology Lab	1
	Total Hours	16

Minimum Required Grade: C-

Additional Upper-Division Courses Required for Microbiology

Code	Title	Hours
	Biochemistry	
	Complete either one semester or one year of Biochemistry courses:	4-6
	One Semester:	
BCH 380	Biochemistry	
	One Year:	
BCH 480	Advanced Biochemistry I	
BCH 482	Advanced Biochemistry II	
	Total Hours	4-6

Minimum Required Grade: C-

Additional Upper-Division Depth Courses in Microbiology

Code	Title	Hours
	Complete 10-12 credits from the following courses (labs must be taken if available). 10 credits if BCH 480-482 was taken; 12 credits if BCH 380 was taken.	10-12
BIOB 410 & BIOB 411	Immunology and Immunology Laboratory	
BIOB 483	Phylogenics and Evolution	
BIOE 370	General Ecology	
BIOH 405	Hematology	
BIOM 402 & BIOM 403	Medical Bacteriology & Mycology and Medicl Bacteriolgy & Myclgy Lb	
BIOM 407 & BIOM 408	Clinical Diagnosis and Clinical Diagnosis Lab	
BIOM 427 & BIOM 428	General Parasitology and General Parasitology Lab	
BIOM 435	Virology	
BIOM 490	Adv Undergrad Research	
	Total Hours	10-12

Minimum Required Grade: C-

Required Courses Outside of the Major

Mathematics

Code	Title	Hours
Complete one of the following courses:		4
M 162	Applied Calculus	
M 171	Calculus I	
Total Hours		4

Minimum Required Grade: C-

Statistics

Code	Title	Hours
Complete the following course:		
STAT 216	Introduction to Statistics	4
Total Hours		4

Minimum Required Grade: C-

Chemistry

Code	Title	Hours
Complete all of the following courses:		
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
CHMY 311	Analytical Chem-Quant Analysis	4
Total Hours		24

Minimum Required Grade: C-

Physics

Code	Title	Hours
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	Fund of Physics w/Calc I and Physics Laboratory I w/Calc	
PHSX 217N & PHSX 218N	Fund of Physics w/Calc II and Physics Laboratory II w/Calc	
Total Hours		10

Minimum Required Grade: C-

(BIOM 411). The Advanced College Writing Requirement is completed with one more course, chosen from any of the following.

1/3 Advanced Writing Courses

Code	Title	Hours
BCH 482	Advanced Biochemistry II	3
BIOB 410	Immunology	3
BIOB 425	Adv Cell & Molecular Biology	3
BIOB 483	Phylogenics and Evolution	3
BIOE 403	Vert Design & Evolution	5
BIOE 409	Behavior & Evolution Discussion	1
BIOE 428	Freshwater Ecology	5
BIOL 484	Plant Evolution	3
BIOM 402	Medical Bacteriology & Mycology	3
BIOO 320	General Botany	5
BIOO 434	Plant Physiology Lab	1
BIOO 470	Ornithology	4
BIOO 475	Mammalogy	4

Minimum Required Grade: C-

2/3 Advanced Writing Courses

Code	Title	Hours
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 342	Field Ecology	5
BIOE 371	Gen Ecology Lab (equiv to 271)	2
BIOM 411	Exprmntl Microbial Genetics Lab	1
BIOM 499	Undergraduate Thesis	3-6

Minimum Required Grade: C-

Complete Advanced Writing Course

Code	Title	Hours
BIOH 462	Principles Medical Physiology	3

Minimum Required Grade: C-

Advanced College Writing Requirement

Rule: Complete the equivalent of a full writing course (either three 1/3 writing courses or one 2/3 writing course + one 1/3 writing course or one complete writing course). To complete the Advanced College Writing Requirement, Microbiology students take at least 2 partial writing courses. The Microbiology degree requires one 2/3 writing course