MICROBIOLOGY B.S.

Bachelor of Science - Microbiology

College Humanities & Sciences

Degree Specific Credits: 91
Required Cumulative GPA: 2.0
Catalog Year: 2017-2018

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
Biology/Microbiology Lower Division Core 17
Upper Division Microbiology Core Courses 19
Additional UD Major Courses Required for Microbiology 11-15
Biochemistry
Additional UD Depth Courses in Microbiology
Required Courses Outside of the Major 42
Mathematics
Chemistry
Physics
Upper Division Writing Expectation for the Major 2-7
Total Hours 91-100

Biology/Microbiology Lower Division Core
Rule: All of the following courses are required.

Note: The lower division core should be completed before attempting most upper division major courses.

AP Biology credit may be substituted for either BIOB 160N/BIOB 161N or BIOB 170N/BIOB 171N.

BIOB 160N Principles of Living Systems 3
BIOB 161N Principles of Living Systems Lab 1
BIOB 170N Principles Biological Diversity 3
BIOB 171N Principles Biological Dvrsity 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
Rule: All of the following courses are required.

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 Eclogy & Evltn 3
BIOM 450 Microbial Physiology 3
BIOM 451 Microbial Physiology Lab 1
Total Hours 16
Minimum Required Grade: C-

Additional UD Major Courses Required for Microbiology
Minimum Required Grade: C-

Biochemistry
Select either one semester or one year of biochemistry from the following:
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 UD Depth Courses in Microbiology
Select 10-12 credits from the following (labs must be taken if available):
BIOB 410 & BIOB 411 Immunology and Immunology Laboratory
BIOB 483 Phyllogenics and Evolution
BIOE 370 General Ecology
BIOH 405 Hematology
BIOM 402 Medical Bacteriology Mycology & MEDICAL BACTERIOLOGY LAB
BIOM 407 Clinical Diagnosis & BIOM 408 and Clinical Diagnosis Lab
BIOM 427 General Parasitology & BIOM 428 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
Minimum Required Grade: C-

Mathematics
Rule: All of the following courses are required.
M 162 Applied Calculus 4
or M 171 Calculus I
STAT 216 Introduction to Statistics 4

Total Hours 8

Minimum Required Grade: C-

Chemistry
Rule: All of the following courses are required.

CHMY 141N College Chemistry I 4
CHMY 142N College Chemistry I Lab 1
CHMY 143N College Chemistry II 4
CHMY 144N College Chemistry II Lab 1
CHMY 221 Organic Chemistry I 3
CHMY 222 Organic Chemistry I Lab 2
CHMY 223 Organic Chemistry II 3
CHMY 224 Organic Chemistry II Lab 2
CHMY 311 Analytical Chem-Quant Analysis 4

Total Hours 24

Minimum Required Grade: C-

Physics
Rule: All of the following courses are required.

Select one of the following physics sequences: 10

Algebra- and Trigonometry-based:

PHSX 205N & PHSX 206N College Physics I and College Physics I Laboratory

Calculus-based:

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-

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)

Note: To meet the Advanced College Writing Requirement, Microbiology students take at least 2 partial writing courses. The Microbiology degree requires one 2/3 writing course (BIOM 411). The Advanced College Writing Requirement is completed with one more course, chosen from any of the following:

Minimum Required Grade: C-

1/3 Advanced Writing Courses

BCH 482 Advanced Biochemistry II 3
BIOL 410 Immunology 3
BIOM 425 Adv Cell & Molecular Biology 3

2/3 Advanced Writing Courses

BCH 486 Biochemistry Research Lab 3
BCH 499 Senior Thesis/Capstone 3-6
BIOE 342 Field Ecology 5
BIOE 371 Gen Ecology Lab (equiv to 271) 2
BIOM 411 Exprmntl Microbial Genetcs Lab 1
BIOM 499 Undergraduate Thesis 3-6

Minimum Required Grade: C-

Complete Advanced Writing Course

BIOH 462 Principles Medical Physiology 3

Exception to the Modern/Classical Languages Requirement

Rule: Choose one of the following Math courses

Note: The Division of Biological Sciences has been granted an exception to the Modern/Classical Language Requirement. Either of these Calculus courses (required by the major) will satisfy this requirement.

M 162 Applied Calculus 4
or M 171 Calculus I

Total Hours 4

Minimum Required Grade: C-