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
      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 Pnclps of Living Systems Lab 1
BIOB 170N Principles Biological Diversity 3
BIOB 171N Prncps 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

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 Phylogenics and Evolution
BIOE 370 General Ecology
BIOM 370 Immunology
BIOM 402 & BIOM 403 Medical Bacteriology & Mycology & Medical Bacteriology & Mycology Lab
BIOM 407 & BIOM 408 Clinical Diagnosis & Clinical Diagnosis Lab
BIOM 427 & BIOM 428 General Parasitology & 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.
Microbiology B.S.

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

PHSX 207N College Physics II
& PHSX 208N and College Physics II Laboratory
Calculus-based:

PHSX 215N Fund of Physics w/Calc I
& PHSX 216N and Physics Laboratory I w/Calc

PHSX 217N Fund of Physics w/Calc II
& PHSX 218N 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
BIOB 410 Immunology 3
BIOB 425 Adv Cell & Molecular Biology 3

2/3 Advanced Writing Courses
BCH 483 Phyllogenics 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-

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-