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 Prcnpls of Living Systems Lab 1
BIOB 170N Princps Biological Diversity 3
BIOB 171N Princps 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 Ecly & 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 4-6
the following:
One Semester:
   BCH 380 Biochemistry
One Year:
   BCH 480 Advanced Biochemistry I
   BCH 482 Advanced Biochemistry II
Total Hours 4-6

Additional UD Depth Courses in Microbiology
Select 10-12 credits from the following (labs must be taken if 10-12
available):
   BIOB 410 & BIOB 411 Immunology and Immunology Laboratory
   BIOB 483 Phylogenics and Evolution
   BIOE 370 General Ecology
   BIOH 405 Hematology
   BIOM 402 Medical Bacteriology & Mycology
   & BIOM 403 and Medical Bacteriology & Myclgy Lb
   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.
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**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 and College Physics I Laboratory 4
- PHSX 206N College Physics I Laboratory 2

**Calculus-based:**

- PHSX 215N Fund of Physics w/Calc I and Physics Laboratory I w/Calc 3
- PHSX 216N Fund of Physics w/Calc II and Physics Laboratory II w/Calc 3

**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
- BIO 410 Immunology 3
- BIO 425 Adv Cell & Molecular Biology 3

**2/3 Advanced Writing Courses**

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

**Minimum Required Grade:** C-

**Complete Advanced Writing Course**

- BIO 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 4

**Minimum Required Grade:** C-