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 Fprncpls of Living Systems Lab 1
BIOB 170N Prncpls Biological Diversity 3
BIOB 171N Princpls 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 Eclgy & 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 Immunology & BIB B 411 and Immunology Laboratory
BIOB 483 Phyllogenics and Evolution
BIOE 370 General Ecology
BIOH 405 Hematology
BIOM 402 Medical Bacteriology & Mycology & BIOM 403 and Medical Bacteriology & Mycloy 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.
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  College Physics I Laboratory  

PHSX 207N  College Physics II  & PHSX 208N  College Physics II Laboratory

Calculus-based:

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

PHSX 217N  Fund of Physics w/Calc II  & PHSX 218N  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
BIOE 410  Immunology  3
BIOB 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 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

BCH 486  Biochemistry Research Lab  3
BCH 499  Senior Thesis/Capstone  3-6
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-