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 Prcnps of Living Systems Lab 1
BIOB 170N Princpls Biological Diversity 3
BIOB 171N Principls 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 & BIOB 411 Immunology and Immunology Laboratory
BIOB 483 Phylagenics and Evolution
BIOE 370 General Ecology
BIOH 405 Hematology
BIOM 402 Medical Bacteriology & Mycology
& BIOM 403 and Medicl Bacteriolgy & 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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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  Fund of Physics w/Calc II
PHSX 217N  Fund of Physics w/Calc I
& PHSX 218N  Fund of Physics w/Calc II
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

BCH 483  Phylogenics and Evolution  3
BIOE 403  Vert Design & Evolution  5
BIOE 409  Behavior & Evolution Discussion  1
BIOE 428  Freshwater Ecology  5
BIOE 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

2/3 Advanced Writing Courses
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 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  4
Total Hours  4
Minimum Required Grade: C-