MICROBIOLOGY, B.A. (L&S)

REQUIREMENTS

UNIVERSITY GENERAL EDUCATION REQUIREMENTS

All undergraduate students at the University of Wisconsin–Madison are required to fulfill a minimum set of common university general education requirements to ensure that every graduate acquires the essential core of an undergraduate education. This core establishes a foundation for living a productive life, being a citizen of the world, appreciating aesthetic values, and engaging in lifelong learning in a continually changing world.

Various schools and colleges will have requirements in addition to the requirements listed below. Consult your advisor for assistance, as needed. For additional information, see the university Undergraduate General Education Requirements section of the Guide.

General Education

- Breadth—Humanities/Literature/Arts: 6 credits
- Breadth—Natural Science: 4 to 6 credits, consisting of one 4- or 5-credit course with a laboratory component; or two courses providing a total of 6 credits
- Breadth—Social Studies: 3 credits
- Communication Part A & Part B *
- Ethnic Studies *
- Quantitative Reasoning Part A & Part B *

* The mortarboard symbol appears before the title of any course that fulfills one of the Communication Part A or Part B, Ethnic Studies, or Quantitative Reasoning Part A or Part B requirements.

COLLEGE OF LETTERS & SCIENCE DEGREE REQUIREMENTS: BACHELOR OF ARTS (B.A.)

Students pursuing a bachelor of arts degree in the College of Letters & Science must complete all of the requirements below. The College of Letters & Science allows this major to be paired with either a bachelor of arts or a bachelor of science curriculum.

BACHELOR OF ARTS DEGREE REQUIREMENTS

Mathematics

Complete one of the following:

- MATH 171 & MATH 217
  Calculus with Algebra and Trigonometry I and Calculus with Algebra and Trigonometry II

- MATH 221
  Calculus and Analytic Geometry I

Statistics

Complete one of the following:

- STAT 301
  Introduction to Statistical Methods

- STAT 371
  Introductory Applied Statistics for the Life Sciences

General Chemistry

Complete one of the following:

- CHEM 103 & CHEM 104
  General Chemistry I and General Chemistry II

- CHEM 109
  Advanced General Chemistry

- CHEM 115 & CHEM 116
  Chemical Principles I and Chemical Principles II

Organic Chemistry

Complete ALL of the following:

- CHEM 343
  Organic Chemistry I

- CHEM 344
  Introductory Organic Chemistry Laboratory

- CHEM 345
  Organic Chemistry II

Biology Foundation

Complete one of the following:

- 10-13

NON–L&S STUDENTS PURSUING AN L&S MAJOR

Non–L&S students who have permission from their school/college to pursue an additional major within L&S only need to fulfill the major requirements. They do not need to complete the L&S Degree Requirements above.

REQUIREMENTS FOR THE MAJOR

<table>
<thead>
<tr>
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<tr>
<td>Mathematics</td>
<td>Complete one of the following:</td>
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<td>CHEM 344</td>
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Microbiology, B.A. (L&S)

BIOLOGY/BOTANY/ZOOLOGY 151 & BIOLOGY/BOTANY/ZOOLOGY 152

BIOCORE 381 & BIOCORE 382 & BIOCORE 383 & BIOCORE 384 & BIOCORE 485

ZOOLOGY/BOTANY 101 & ZOOLOGY/BOTANY 102 & BOTANY/BOTANY 130

Evolution, Ecology, and Genetics
and Evolution, Ecology, and Genetics Laboratory
and Cellular Biology
and Cellular Biology Laboratory
and Principles of Physiology

Animal Biology
and Animal Biology Laboratory
and General Botany

Introductory Biology
and Introductory Biology Laboratory

Evolution, Ecology, and Genetics
and Evolution, Ecology, and Genetics Laboratory
and Cellular Biology
and Cellular Biology Laboratory
and Principles of Physiology

Biology of Microorganisms
Biology of Microorganisms Laboratory
Critical Analyses in Microbiology
Diversity, Ecology and Evolution of Microorganisms
Microbial Genetics & Molecular Machines
Physiology of Microorganisms
Advanced Laboratory Techniques in Microbiology (FALL ONLY)
Capstone Research Project in Microbiology (SPRING ONLY)
Food Microbiology Laboratory
Host-Parasite Interactions
The Microbiome of Plants, Animals, and Humans
Introduction to Disease Biology
Environmental Microbiology
Soil Microbiology and Biochemistry
Topics in Biotechnology (topics vary by semester)
Advanced Microbial Genetics
Prokaryotic Molecular Biology
Bioinformatics for Microbiologists
Microbiology at Atomic Resolution

Complete one of the following: 8-10

PHYSICS 103 & PHYSICS 104
PHYSICS 207 & PHYSICS 208
PHYSICS 201 & PHYSICS 202

Introduction to Biochemistry
General Biochemistry I
General Biochemistry II

Complete one of the following: 3-6

BIOCHEM 501
BIOCHEM 507
& BIOCHEM 508

Introduction to Biochemistry
General Biochemistry I
and General Biochemistry II

Microbiology Courses

Microbiology Core (all required):
Except where noted, all Microbiology Core courses are offered every fall and spring semester.

MICROBIO 303
MICROBIO 304
MICROBIO 305
MICROBIO 450
MICROBIO 470
MICROBIO 526
MICROBIO 527

Biology of Microorganisms
Biology of Microorganisms Laboratory
Critical Analyses in Microbiology
Diversity, Ecology and Evolution of Microorganisms
Microbial Genetics & Molecular Machines
Physiology of Microorganisms
Advanced Laboratory Techniques in Microbiology (FALL ONLY)

Microbiology Capstone (required):
MICROBIO 551

Capstone Research Project in Microbiology (SPRING ONLY)

Microbiology Electives

Complete at least 6 credits; at least 3 credits must come from Set A. Not all elective courses are offered every semester.

Set A: 3-6

MICROBIO/FOOD SCI 324

Food Microbiology Laboratory

Set B: 0-3

BIOCHEM 570
BIOCHEM/M M & I 575
BIOCHEM 601

Computational Modeling of Biological Systems
Biology of Viruses
Protein and Enzyme Structure and Function

BOTANY 330
BOTANY/PL PATH 332

Algae
Fungi

BOTANY/ENTOM/PL PATH 505
CHEM 565
COMP SCI/B M 1 576
F&W ECOL/SURG SCI 548
FOOD SCI 550
M M & I 301
M M & I 341
M M & I/ENTOM/PATH-BIO/ZOOLOGY 350
M M & I 554
M M & I 555

Plant-Microbe Interactions: Molecular and Ecological Aspects
Biophysical Chemistry
Introduction to Bioinformatics
Diseases of Wildlife
Fermented Foods and Beverages
Pathogenic Bacteriology
Immunology
Parasitology
Emerging Infectious Diseases and Bioterrorism
Vaccines: Practical Issues for a Global Society
Clinical and Public Health Microbiology
General Virology-Multiplication of Viruses
Immunology

PL PATH 622

Plant-Bacterial Interactions
PL PATH/ BOTANY/ GENETICS/ M&M & I 655

Biology and Genetics of Fungi

Total Credits 64-88

RESIDENCE AND QUALITY OF WORK

- 2.000 GPA in all MICROBIO courses and courses approved for the major
- 2.000 GPA on 15 upper-level major credits, in residence
- 15 credits of MICROBIO or courses counting toward the major, taken on campus

MICROBIO 300 through 699 count as upper level in the major, excluding MICROBIO 303 and MICROBIO 304. Intermediate- and advanced-level courses outside of MICROBIO that count for the major are also considered upper level.

HONORS IN THE MAJOR

Students may declare Honors in the Microbiology Major in consultation with the Microbiology undergraduate advisor.

HONORS IN THE MAJOR REQUIREMENTS

To earn Honors in the Major in Microbiology, students must satisfy both the requirements for the major (above) and the following requirements:

- Earn a 3.300 University GPA
- Earn a 3.300 GPA for all courses accepted in the major
- MICROBIO 681 and MICROBIO 682 for a total of 6 credits
- 9 credits of Honors course work (with grade B or better) from:

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<td>MICROBIO/ SOIL SCI 425</td>
<td>Environmental Microbiology</td>
<td>3</td>
</tr>
<tr>
<td>MICROBIO 450</td>
<td>Diversity, Ecology and Evolution of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>MICROBIO 470</td>
<td>Microbial Genetics &amp; Molecular Machines</td>
<td>3</td>
</tr>
<tr>
<td>MICROBIO 526</td>
<td>Physiology of Microorganisms</td>
<td>3</td>
</tr>
<tr>
<td>PATH-BIO/ M&amp;M &amp; I 528</td>
<td>Immunology</td>
<td>3</td>
</tr>
<tr>
<td>MICROBIO 607</td>
<td>Advanced Microbial Genetics</td>
<td>3</td>
</tr>
<tr>
<td>MICROBIO/ BIOCHEM/ GENETICS 612</td>
<td>Prokaryotic Molecular Biology</td>
<td>3</td>
</tr>
<tr>
<td>PL PATH 622</td>
<td>Plant-Bacterial Interactions</td>
<td>2-3</td>
</tr>
<tr>
<td>MICROBIO 632</td>
<td>Industrial Microbiology/Biotechnology</td>
<td>2</td>
</tr>
<tr>
<td>ONCOLOGY/ PL PATH 640</td>
<td>General Virology-Multiplication of Viruses</td>
<td>3</td>
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</table>

MICROBIO/ BMOLCHEM 668 Microbiology at Atomic Resolution 3

UNIVERSITY DEGREE REQUIREMENTS

Total Degree To receive a bachelor’s degree from UW-Madison, students must earn a minimum of 120 degree credits. The requirements for some programs may exceed 120 degree credits. Students should consult with their college or department advisor for information on specific credit requirements.

Residency Degree candidates are required to earn a minimum of 30 credits in residence at UW-Madison. "In residence" means on the UW-Madison campus with an undergraduate degree classification. "In residence" credit also includes UW-Madison courses offered in distance or online formats and credits earned in UW-Madison Study Abroad/Study Away programs.

Quality of Work Undergraduate students must maintain the minimum grade point average specified by the school, college, or academic program to remain in good academic standing. Students whose academic performance drops below these minimum thresholds will be placed on academic probation.