

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 (<http://guide.wisc.edu/undergraduate/#requirementsforundergraduatestudytext>) section of the *Guide*.

General Education	<ul style="list-style-type: none"> • 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 *
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* 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 the University General Education Requirements for Quantitative Reasoning A (QR-A) and Quantitative Reasoning B (QR-B) coursework.

Foreign Language	<ul style="list-style-type: none"> • Complete the fourth unit of a foreign language; OR • Complete the third unit of a foreign language and the second unit of an additional foreign language.
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L&S Breadth	<ul style="list-style-type: none"> • 12 credits of Humanities, which must include 6 credits of literature; and • 12 credits of Social Science; and • 12 credits of Natural Science, which must include one 3+ credit Biological Science course and one 3+ credit Physical Science course.
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Liberal Arts and Science Coursework	Complete at least 108 credits.
Depth of Intermediate/Advanced work	Complete at least 60 credits at the intermediate or advanced level.
Major	Declare and complete at least one major.
Total Credits	Complete at least 120 credits.
UW-Madison Experience	<ul style="list-style-type: none"> • 30 credits in residence, overall; and • 30 credits in residence after the 86th credit.
Quality of Work	<ul style="list-style-type: none"> • 2,000 in all coursework at UW–Madison • 2,000 in Intermediate/Advanced level coursework at UW–Madison

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

Code	Title	Credits
Mathematics		
Complete one of the following:		5-10
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:		3
STAT 301	Introduction to Statistical Methods	
STAT 371	Introductory Applied Statistics for the Life Sciences	
General Chemistry		
Complete one of the following:		5-10
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:		3
CHEM 343	Organic Chemistry I	

CHEM 344	Introductory Organic Chemistry Laboratory	2	Complete at least 6 credits; at least 3 credits must come from Set A. Not all elective courses are offered every semester.
CHEM 345	Organic Chemistry II	3	
Biology Foundation			Set A: 3-6
Complete one of the following:		10-13	
BIOLOGY/ BOTANY/ ZOOLOGY 151 & BIOLOGY/ BOTANY/ ZOOLOGY 152	Introductory Biology and Introductory Biology		MICROBIO/ FOOD SCI 324 Food Microbiology Laboratory
BIOCORE 381 & BIOCORE 382 & BIOCORE 383 & BIOCORE 384 & BIOCORE 485	Evolution, Ecology, and Genetics and Evolution, Ecology, and Genetics Laboratory and Cellular Biology and Cellular Biology Laboratory and Principles of Physiology		MICROBIO/ FOOD SCI 325 Food Microbiology
ZOOLOGY/ BIOLOGY 101 & ZOOLOGY/ BIOLOGY 102 & BOTANY/ BIOLOGY 130	Animal Biology and Animal Biology Laboratory and General Botany		MICROBIO 330 Host-Parasite Interactions
			MICROBIO/ AN SCI/ BOTANY 335 The Microbiome of Plants, Animals, and Humans
			MICROBIO 345 Introduction to Disease Biology
			MICROBIO/ SOIL SCI 425 Environmental Microbiology
			MICROBIO/ SOIL SCI 523 Soil Microbiology and Biochemistry
			MICROBIO/ ONCOLOGY 545 Topics in Biotechnology (topics vary by semester)
			MICROBIO 607 Advanced Microbial Genetics
			MICROBIO/ BIOCHEM/ GENETICS 612 Prokaryotic Molecular Biology
			MICROBIO 657 Bioinformatics for Microbiologists
			MICROBIO/ BMOLCHEM 668 Microbiology at Atomic Resolution
Physics			Set B: 0-3
Complete one of the following:		8-10	
PHYSICS 103 & PHYSICS 104	General Physics and General Physics		BIOCHEM 570 Computational Modeling of Biological Systems
PHYSICS 207 & PHYSICS 208	General Physics and General Physics		BIOCHEM/M M & I 575 Biology of Viruses
PHYSICS 201 & PHYSICS 202	General Physics and General Physics		BIOCHEM 601 Protein and Enzyme Structure and Function
			BOTANY 330 Algae
			BOTANY/PL PATH 332 Fungi
			BOTANY/ ENTOM/PL PATH 505 Plant-Microbe Interactions: Molecular and Ecological Aspects
			CHEM 565 Biophysical Chemistry
			COMP SCI/ B M I 576 Introduction to Bioinformatics
			F&W ECOL/SURG SCI 548 Diseases of Wildlife
			FOOD SCI 550 Fermented Foods and Beverages
			M M & I 301 Pathogenic Bacteriology
			M M & I 341 Immunology
			M M & I/ENTOM/ PATH-BIO/ ZOOLOGY 350 Parasitology
			M M & I 554 Emerging Infectious Diseases and Bioterrorism
			M M & I/POP HLTH 603
			ONCOLOGY/ PL PATH 640 General Virology-Multiplication of Viruses
Biochemistry			
Complete one of the following:		3-6	
BIOCHEM 501	Introduction to Biochemistry		
BIOCHEM 507 & BIOCHEM 508	General Biochemistry I and General Biochemistry II		
Microbiology Courses			
<i>Microbiology Core (all required):</i>			
Except where noted, all Microbiology Core courses are offered every fall and spring semester.			
MICROBIO 303	Biology of Microorganisms	3	
MICROBIO 304	Biology of Microorganisms Laboratory	2	
MICROBIO 305	Critical Analyses in Microbiology	1	
MICROBIO 450	Diversity, Ecology and Evolution of Microorganisms	3	
MICROBIO 470	Microbial Genetics & Molecular Machines	3	
MICROBIO 526	Physiology of Microorganisms	3	
MICROBIO 527	Advanced Laboratory Techniques in Microbiology (FALL ONLY)	2	
<i>Microbiology Capstone (required):</i>			
MICROBIO 551	Capstone Research Project in Microbiology (SPRING ONLY)	2	
<i>Microbiology Electives</i>			

PATH-BIO/ M M & I 528	Immunology	
PL PATH 622	Plant-Bacterial Interactions	
PL PATH/ BOTANY/ GENETICS/ M M & I 655	Biology and Genetics of Fungi	
Total Credits		64-88

ONCOLOGY/ PL PATH 640	General Virology-Multiplication of Viruses	3
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.

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 residence¹
- 15 credits of MICROBIO or courses counting toward the major, taken on campus

¹

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:

Code	Title	Credits
MICROBIO 303	Biology of Microorganisms	3
MICROBIO 304	Biology of Microorganisms Laboratory	2
MICROBIO 330	Host-Parasite Interactions	3
MICROBIO/ SOIL SCI 425	Environmental Microbiology	3
MICROBIO 450	Diversity, Ecology and Evolution of Microorganisms	3
MICROBIO 470	Microbial Genetics & Molecular Machines	3
MICROBIO 526	Physiology of Microorganisms	3
PATH-BIO/ M M & I 528	Immunology	3
MICROBIO 607	Advanced Microbial Genetics	3
MICROBIO/ BIOCHEM/ GENETICS 612	Prokaryotic Molecular Biology	3
PL PATH 622	Plant-Bacterial Interactions	2-3
MICROBIO 632	Industrial Microbiology/ Biotechnology	2