

Microbiology, BS

Requirements

The Bachelor of Science with a major in microbiology requires a minimum of 120 s.h., including 60–65 s.h. of work for the major, depending on the track. Students must maintain a grade-point average of at least 2.00 in all courses for the major and in all UI courses for the major. Courses for the major may not be taken pass/nonpass. Students must also complete the College of Liberal Arts and Sciences GE CLAS Core.

Students must complete at least 12 s.h. of the required 18–22 s.h. in Department of Microbiology and Immunology courses at the University of Iowa.

The major in microbiology can be pursued on either a health sciences or a scholar track.

Students in the health sciences track complete admission requirements for the Carver College of Medicine and for most colleges of medicine as an integral part of the completion of their major requirements. This track is recommended for pre-medical, pre-dental, and pre-pharmacy students.

Students in the scholar track pursue a curriculum with streamlined organic chemistry and physics requirements and expanded microbiology and immunology courses, including advanced laboratory coursework. The scholar track is recommended for students interested in pursuing graduate training or in developing a career as a microbiologist.

Students may shift from one track to the other.

The BS with a major in microbiology requires the following coursework.

Health Sciences Track

Students in the health sciences track complete the following coursework.

Requirements	Hours
Supporting Coursework	42-43
Microbiology and Immunology Courses	18
Advanced Elective Coursework	3

Health Sciences Track, Supporting Coursework

Course #	Title	Hours
All of these:		
BIOL:1411 & BIOL:1412	Foundations of Biology and Diversity of Form and Function	8
BMB:3120 & BMB:3130	Biochemistry and Molecular Biology I and Biochemistry and Molecular Biology II	6
CHEM:1110 & CHEM:1120	Principles of Chemistry I and Principles of Chemistry II	8
CHEM:2210 & CHEM:2220	Organic Chemistry I and Organic Chemistry II	6
CHEM:2410	Organic Chemistry Laboratory	3
One of these:		

BIOS:4120	Introduction to Biostatistics	3
MATH:1460	Calculus for the Biological Sciences	4
MATH:1550	Engineering Calculus I	4
MATH:1850	Calculus I	4
STAT:2010	Statistical Methods and Computing	3
STAT:3510/IGPI:3510	Biostatistics	3

One of these sequences:

PHYS:1511 & PHYS:1512	College Physics I and College Physics II	8
PHYS:1611 & PHYS:1612	Introductory Physics I and Introductory Physics II	8

Health Sciences Track, Microbiology and Immunology Courses

Students earn a minimum of 18 s.h. in Department of Microbiology and Immunology courses from the following.

Course #	Title	Hours
Both of these:		
MICR:2157	General Microbiology (required with a grade of C or higher)	3
MICR:2158	General Microbiology Laboratory (required with a grade of C or higher)	2
Three of these:		
MICR:3147	Immunology and Human Disease	3
MICR:3159	Bacteria and Human Disease	3
MICR:3162	Bacterial Physiology and Cell Biology	3
MICR:3168	Viruses and Human Disease	3
MICR:3170	Bacterial Genetics	3

Students fulfill the remainder of the 18 s.h. with additional microbiology and immunology courses (prefix MICR) selected from those previously listed or the following.

Course #	Title	Hours
MICR:3145	Honors in Microbiology Thesis Preparation	1
MICR:3165	Genetics of Bacterial Pathogens Lab and Discussion	3
MICR:3177	Virology Discussion	2
MICR:3178	Virology Laboratory	2
MICR:3182	Applied Computational Biology	3
MICR:4161	Undergraduate Research in Microbiology	arr.
MICR:4171	Honors Undergraduate Research in Microbiology	arr.
MICR:4175	Topics in Parasitism	1
MICR:5264	Directed Study in Microbiology	arr.

A maximum of 4 s.h. earned in either MICR:4161 Undergraduate Research in Microbiology or MICR:4171 Honors Undergraduate Research in Microbiology may be counted toward the major. However, students earning honors in the major must complete 6 s.h. in MICR:4171

Honors Undergraduate Research in Microbiology; see Honors [p.] in this section of the catalog.

Health Sciences Track, Advanced Elective Coursework

Course #	Title	Hours
3 s.h. from these:		
Additional microbiology and immunology courses (prefix MICR) numbered MICR:3145 to MICR:5264, excluding MICR:3164		
BIOL:2512	Fundamental Genetics	4
BIOL:2723	Cell Biology	3
BIOL:3172	Evolution	4
BIOL:3212/ IGPI:3212	Bioinformatics for Beginners	3
BIOL:3314/ IGPI:3314	Genomics	3
GHS:2000/ ANTH:2103	Introduction to Global Health Studies	3
GHS:2320/ ANTH:2320	Origins of Human Infectious Disease	3
PCOL:3101	Pharmacology I: A Drug's Fantastic Journey	3

Scholar Track

Students in the scholar track complete the following coursework.

Requirements	Hours
Supporting Coursework	32-37
Microbiology and Immunology Courses	22
Advanced Elective Coursework	6

Scholar Track, Supporting Coursework

Course #	Title	Hours
All of these:		
BIOL:1411 & BIOL:1412	Foundations of Biology and Diversity of Form and Function	8
BMB:3120 & BMB:3130	Biochemistry and Molecular Biology I and Biochemistry and Molecular Biology II	6
CHEM:1110 & CHEM:1120	Principles of Chemistry I and Principles of Chemistry II	8
CHEM:2210	Organic Chemistry I	3
One of these:		
PHYS:1400	Basic Physics	4
PHYS:1400 & PHYS:1409	Basic Physics and Basic Physics Lab (PHYS:1400 taken for 3 s.h. and PHYS:1409 taken for 1 s.h.)	4
PHYS:1511 & PHYS:1512	College Physics I and College Physics II	8
One of these:		
BIOS:4120	Introduction to Biostatistics	3
MATH:1460	Calculus for the Biological Sciences	4
MATH:1550	Engineering Calculus I	4

MATH:1850	Calculus I	4
STAT:2010	Statistical Methods and Computing	3
STAT:3510/ IGPI:3510	Biostatistics	3

Scholar Track, Microbiology and Immunology Courses

Students earn a minimum of 22 s.h. in Department of Microbiology and Immunology courses from the following.

Course #	Title	Hours
Both of these:		
MICR:2157	General Microbiology (required with a grade of C or higher)	3
MICR:2158	General Microbiology Laboratory (required with a grade of C or higher)	2
One of these:		
MICR:3165	Genetics of Bacterial Pathogens Lab and Discussion	3
MICR:3178	Virology Laboratory	2
MICR:4161	Undergraduate Research in Microbiology (must be taken for at least 2 s.h.)	arr.
MICR:4171	Honors Undergraduate Research in Microbiology (must be taken for at least 2 s.h.)	arr.
Three of these:		
MICR:3147	Immunology and Human Disease	3
MICR:3159	Bacteria and Human Disease	3
MICR:3162	Bacterial Physiology and Cell Biology	3
MICR:3168	Viruses and Human Disease	3
MICR:3170	Bacterial Genetics	3
Students fulfill the remainder of the 22 s.h. with additional microbiology and immunology courses (prefix MICR) selected from those previously listed or the following.		
Course #	Title	Hours
MICR:3145	Honors in Microbiology Thesis Preparation (required for honors in microbiology)	1
MICR:3165	Genetics of Bacterial Pathogens Lab and Discussion	3
MICR:3177	Virology Discussion	2
MICR:3178	Virology Laboratory	2
MICR:3182	Applied Computational Biology	3
MICR:4161	Undergraduate Research in Microbiology	arr.
MICR:4171	Honors Undergraduate Research in Microbiology	arr.
MICR:4175	Topics in Parasitism	1
MICR:5264	Directed Study in Microbiology	arr.

A maximum of 4 s.h. earned in either MICR:4161 Undergraduate Research in Microbiology or MICR:4171 Honors Undergraduate Research in Microbiology may be counted toward the major. However, students earning honors in the major must complete 6 s.h. in MICR:4171 Honors Undergraduate Research in Microbiology; see Honors [p.] in this section of the catalog.

Scholar Track, Advanced Elective Coursework

Course #	Title	Hours
6 s.h. from these:		
Additional microbiology and immunology courses (prefix MICR) numbered MICR:3145 or above, excluding MICR:3164 and MICR:5875		
BIOL:2512	Fundamental Genetics	4
BIOL:2723	Cell Biology	3
BIOL:3172	Evolution	4
BIOL:3212/ IGPI:3212	Bioinformatics for Beginners	3
BIOL:3314/ IGPI:3314	Genomics	3
BMB:3310/ CBIO:3310/ MMED:3310	Practical Data Science and Bioinformatics	3
GHS:2000/ ANTH:2103	Introduction to Global Health Studies	3
GHS:2320/ ANTH:2320	Origins of Human Infectious Disease	3
PCOL:3101	Pharmacology I: A Drug's Fantastic Journey	3
PCOL:3102	Pharmacology II: Mechanisms of Drug Action	3