

# MICROBIOLOGY UNDERGRADUATE PROGRAM

## Program of Study

Degree: BS, Microbiology (Catalog: 2018-2019)

### I) Communications (13 credits)

- \_\_\_\_\_ Engl 150 (3) and \_\_\_\_\_ Engl 250 (3)
- \_\_\_\_\_ Sp Com 212 (3)
- \_\_\_\_\_ Engl 302 (3) or Engl 309 (3) or Engl 314 (3) or Engl 312 (3)
- \_\_\_\_\_ Lib 160 (1)

### II) Mathematical Sciences (11-12 credits)

- \_\_\_\_\_ Stat 101 (4) or \_\_\_\_\_ Stat 104 (3)

#### Basic Mathematics

2 semesters with at least one semester of calculus

Suggested options:

- \_\_\_\_\_ Math 143 (4) Pre-Calc & Math 160 (4) Surv Calc
- \_\_\_\_\_ Math 145 (3) Trig & Math 160 (4) Surv Calc
- \_\_\_\_\_ Math 165 (4) & Math 166 (4) Calc I&II
- \_\_\_\_\_ Math 165 (4) & Stat 301 (4)

### III) Physical Sciences (23-31 credits)

#### General Chemistry (8 credits)

- \_\_\_\_\_ Chem 177(4), 177L(1), and Chem 178(3)

#### Physics (5 or 10 Credits)

- \_\_\_\_\_ Phys 111/111L (5) and Phys 112/112L (5)  
General (recommended)
- \_\_\_\_\_ Phys 115 (4) & Phys 115L (1) Phys for Life Sci.  
(only if not doing further schooling)

#### Organic Chemistry (7 credits)

- \_\_\_\_\_ Chem 331 (3), 331L (1), and 332 (3)

#### Biochemistry Choose 1 of the following (3-6 credits)

- \_\_\_\_\_ BBMB 404 (3) and BBMB 405 (3)
- \_\_\_\_\_ BBMB 301 (3)
- \_\_\_\_\_ BBMB 316 (3)

### IV) Personal Development, Human Relations, and Global Awareness (Total of 15 credits)

- \_\_\_\_\_ Three credits in [humanities](#)
- \_\_\_\_\_ Three credits in [social sciences](#)
- \_\_\_\_\_ Three credits in [ethics \(See list\)](#)
- \_\_\_\_\_ Three credits in [international persp. \(See list\)](#)
- \_\_\_\_\_ Three credits in [US diversity \(See list\)](#)

### V) Biological Sciences (15 credits)

- \_\_\_\_\_ Biol 211 (3) and Biol 211L (1)
- \_\_\_\_\_ Biol 212 (3) and Biol 212L (1)
- \_\_\_\_\_ Biol 313 (3) and Biol 313L (1)
- \_\_\_\_\_ Biol 314 (3) or Biol 328 (3)

### VI) Microbiology (Total of 31 credits)

#### Core Microbiology Courses (16) credits

- \_\_\_\_\_ F MICRO 110 (1) Orientation
- \_\_\_\_\_ F/S MICRO 302 (3) Biology of Micro
- \_\_\_\_\_ F MICRO 310 (3) Medical Microbiology
- \_\_\_\_\_ S MICRO 320 (4) Molecular and Cellular Bact.
- \_\_\_\_\_ S\* MICRO 430 (3) Micro Diversity & Ecology  
or S\* MICRO 477 (3) Bact-Plant Interactions  
or F Micro 456 (3) Mycology
- \_\_\_\_\_ S MICRO 450 (2) Capstone Seminar
- \_\_\_\_\_ F MICRO 451 (R) Microbiology Survey

#### Core Laboratory Courses (6 Credits)

- \_\_\_\_\_ F/S MICRO 302L (1) General Micro Lab
- \_\_\_\_\_ F MICRO 310L (1) Medical Micro Lab or
- \_\_\_\_\_ S MICRO 475L (1) Immunology Lab
- \_\_\_\_\_ F/S MICRO 440 (4) Microbial Genetics &  
Physiology & Diversity & Ecology Lab

#### Microbiology Electives – (9 credits required) with no more than 3 credits from laboratory courses

##### Common Clinical Electives

- \_\_\_\_\_ S MICRO 353 (3) Intro Parasitology
- \_\_\_\_\_ S MICRO 374 (3) Insects & Our Health
- \_\_\_\_\_ F MICRO 408 (3) Virology
- \_\_\_\_\_ S MICRO 475 (3) Immunology
- \_\_\_\_\_ S MICRO 475L (1) Immunology Lab
- \_\_\_\_\_ F MICRO 517X (3) Gut Microbiome
- \_\_\_\_\_ F MICRO 586 (4) Medical Bacteriology

##### Common Environmental Electives

- \_\_\_\_\_ F/S PLP 408 (3) Principles of Plant Pathology
- \_\_\_\_\_ S\* MICRO 430 (3) Micro Diversity & Ecology
- \_\_\_\_\_ F MICRO 456 (3) Mycology
- \_\_\_\_\_ S\* MICRO 477 (3) Bacteria-Plant interactions
- \_\_\_\_\_ S MICRO 487 (3) Microbial Ecology

##### Common Physiology/Genetics Electives

- \_\_\_\_\_ F\* MICRO 402 (3) Microbial Genetics
- \_\_\_\_\_ F\* MICRO 410 (2) Insect-Virus Interactions
- \_\_\_\_\_ S\* MICRO 430 (3) Micro Diversity & Ecology

##### Common Food Microbiology Electives

- \_\_\_\_\_ S MICRO 407 (3) Micro Food Safety
- \_\_\_\_\_ S\* MICRO 419 (3) Foodborne Hazards
- \_\_\_\_\_ F MICRO 420 (3) Food Microbiology
- \_\_\_\_\_ S MICRO 421 (3) Food Microbiology Lab

Other courses upon written request & review by the Undergrad Micro Supervisory Committee.

- \_\_\_\_\_ F/S/SS Micro 490 (1-3) Independent Study

### VII) Electives (8-16 credits) Courses to obtain 128 total credit hours

F=offered fall semester S=offered spring semester,  
F\*/S\* = offered alternate fall or spring

Minors to Consider: Pharmacology & Toxicology,  
Food Safety, Genetics, Emerging Global Diseases

**Iowa State University  
College of Agriculture  
Microbiology Eight Semester Plan  
18-19 Catalog**

<b>Fall</b>				<b>Spring</b>		
Chem 177/177L	General Chemistry & Lab	5		Chem 178	General Chemistry	3
Biol 211/211L	Principles of Biology & Lab	4		Biol 212/212L	Principles of Biology & Lab	4
Engl 250 or 150	Written Oral Visual and Electronic Comm	3		Stat 104	Statistics	3
Micro 101	Microbes in Society	3		Micro 302/302L	Biology of Microorganisms & Lab	4
Micro 110	Orientation in Microbiology	1		Social Sciences	Social Sciences (from list)	3
Lib 160	Library Instruction	1				17
		17				
<b>Fall</b>				<b>Spring</b>		
Chem 331/331L	Organic Chemistry I & Lab	4		Chem 332	Organic Chemistry II	3
Math 143, 145 or Calc	Trig, Pre-Calc, or Calculus	4		Biol 313/313L	Genetics & Lab	4
Micro 310/310L	Medical Microbiology & Lab	4		Math or Stat	Calculus (I or II) or Intermediate Stats (301)	4
Ethics	Ethics (from list)	3		Micro Choice	Micro Elective	3
		15		Humanities	Humanities (from list)	3
						17
<b>Fall</b>				<b>Spring</b>		
Biol 314 or Biol 328	Cell Biology or cellular aspects of human diseases	3		Engl Choice	Advanced English – 302, 309, 312 or 314	3
Phys 111/111L or Phys 115/115L	General Physics I or Phys for Life Sci. with lab	5		Phys 112/112L	General Physics II or Micro elective	5
Sp Cm 212	Fundamentals of Public Speaking	3		BBMB 405	Biochemistry	3
BBMB 404	Biochemistry	3		Micro 320	Molecular & Cellular Bacteriology	4
Micro 451	Microbiology Survey	R				15
General elective	General Elective	3				
		17				
<b>Fall</b>				<b>Spring</b>		
Micro 440	Lab in Microbial Phys, Gen & Div.	4		General Elective	General Elective	3
General Electives	General Electives	6		US Diversity	US Diversity (from list)	3
Micro Choice	Microbiology Elective	3		Micro Choices	Microbiology Electives	6
Int. Perspective	International perspectives (from list)	3		Micro 450	Capstone Seminar	2
		16				14

**Courses that work well for summer or study-abroad**