

# MICROBIOLOGY UNDERGRADUATE PROGRAM

## Program of Study: Micro & Genetics Major

Degree: BS, Microbiology (Catalog: 2021-2022)

### 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)
- \_\_\_\_\_ Math 160 (4) or Math 165 (4)
- \_\_\_\_\_ Stat 301 (4) or Math 166 (4)

### III) Physical Sciences (32 credits)

#### General Chemistry (8 credits)

- \_\_\_\_\_ Chem 177(4), 177L(1) Gen. Chem I
- \_\_\_\_\_ Chem 178 (3), **178L (1)** Gen Chem II

#### Physics (10 Credits)

- \_\_\_\_\_ Phys 131/131L (5) Gen. Physics I
- \_\_\_\_\_ Phys 132/132L (5) Gen. Physics II

#### Organic Chemistry (8 credits)

- \_\_\_\_\_ Chem 331 (3), 331L (1) Organic Chem I
- \_\_\_\_\_ Chem 332 (3), **332L (1)** Organic Chem II

#### Biochemistry (6 credits)

- \_\_\_\_\_ BBMB 404 (3) Biochemistry I
- \_\_\_\_\_ BBMB 405 (3) Biochemistry II

### 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](#)
- \_\_\_\_\_ Three credits in [international diversity](#)
- \_\_\_\_\_ Three credits in [US diversity](#)
- \_\_\_\_\_ **Three credits in [Environmental Awareness](#) \*\*\***

### V) Biological Sciences (18 credits)

- \_\_\_\_\_ Biol 211 (3) & Biol 211L (1) Principles of Bio I
- \_\_\_\_\_ Biol 212 (3) & Biol 212L (1) Principles of Bio II
- \_\_\_\_\_ Biol 313 (3) & Biol 313L (1) General Genetics
- \_\_\_\_\_ Biol 314 (3) Mol. Cell Bio.
- \_\_\_\_\_ **Biol 315 (3)** Evolution

### 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) Microb Diversity & Ecology or S\* MICRO 477 (3) Bact-Plant Interactions or F Micro 456 (3) Mycology
- \_\_\_\_\_ S MICRO 450 (2) Senior Seminar
- \_\_\_\_\_ F MICRO 451 (R) Junior Survey

#### Core Laboratory Courses (6 Credits)

- \_\_\_\_\_ F/S MICRO 302L (1) General Micro Lab
- \_\_\_\_\_ F MICRO 310L (1) Medical Micro 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 374 (3) Insects & Our Health
- \_\_\_\_\_ S MICRO 428 (3) Princ. Of Epidemiology
- \_\_\_\_\_ S MICRO 475 (3) Immunology
- \_\_\_\_\_ S MICRO 475L (2) Immunology Lab
- \_\_\_\_\_ F MICRO 517 (3) Gut Microbiome
- \_\_\_\_\_ F MICRO 586 (3) Medical Bacteriology

##### Common Environmental Electives

- \_\_\_\_\_ S MICRO 353 (3) Intro Parasitology
- \_\_\_\_\_ S\* MICRO 430 (3)\*\*Microb Diversity & Ecology
- \_\_\_\_\_ F MICRO 456(3) \*\*Mycology
- \_\_\_\_\_ S MICRO 477 (3)\*\*Bacteria-Plant interactions
- \_\_\_\_\_ F MICRO 487 (3) Microbial Ecology

##### Common Physiology/Genetics Electives

- \_\_\_\_\_ F\* MICRO 402 (3) Microbial Genetics
- \_\_\_\_\_ F MICRO 408 (3) Virology
- \_\_\_\_\_ S\* MICRO 430 (3) Microb Diversity & Ecology

##### Common Food Microbiology Electives

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

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

### VII) Courses for Genetics Major (12-13)

- \_\_\_\_\_ F **GEN 409** (3) Molecular Genetics
- \_\_\_\_\_ S **GEN 410** (3) Analytical Genetics
- \_\_\_\_\_ F **GEN 462** (3) Evol Genetics or  
\_\_\_\_\_ S **EEOB 563** (3) Mole. Phylogenetics
- \_\_\_\_\_ F **GEN 322** or GEN 349  
(one course in Bioinformatics)
- \_\_\_\_\_ F **GEN 491** (1) Senior Seminar or  
MICRO 451 (R) Senior Survey

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

**Highlighted Courses** = specific for genetics

\*\*\* Requirement met with Micro 430, 456 or 477

**Iowa State University  
College of Agriculture  
Microbiology & Genetics One Example of an Eight Semester Plan  
21-22 Catalog**

<b>Fall</b>			<b>Spring</b>		
Chem 177/177L	General Chemistry & Lab	5	Chem 178, 178L	General Chemistry & Lab	4
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	Statistics 101 or 104	3-4
Micro 101	Microbes in Society	3	Micro 302/302L	Biology of Microorganisms & Lab	4
Micro 110	Orientation in Microbiology	1			
Lib 160	Library Instruction	1			15-16
		17			
<b>Fall</b>			<b>Spring</b>		
Chem 331/331L	Organic Chemistry I & Lab	4	Chem 332/332L	Organic Chemistry II & Lab	4
Micro 310/310L	Medical Microbiology & Lab	4	Micro	Micro Environmental or Elective	3
Sp Cm 212	Fundamentals of Public Speaking	3	Biol 314	Cell Biology	3
Biol 313/313L	Genetics & Lab	4	Math 160 or 165	Calculus	4
Humanities	Humanities elective	3	Social	Social Science elective	3
		18			17
<b>Fall</b>			<b>Spring</b>		
Ethics	Ethics	3	Micro 320	Molecular and Cellular Bacteriology.	4
Micro Choice	Micro Environmental or Micro Elective	3	Phys 132&132L	General Physics II	5
Phys 131&131L	Physics	5	Engl Choice	Advanced English – 302, 309, 312 or 314	3
Stat or Math	Stat 301 or Math 166	3-4	Biol 315	Biological Evolution	3
Gen 409	Molecular Genetics	3	BBMB404	Biochemistry 1	3
Micro 451	Micro Senior Survey	R			18
		17-18	<b>Spring</b>		
<b>Fall</b>			US Diversity	US Diversity (from list)	3
Micro Choice	Microbiology Elective	3	Micro Choice	Microbiology Elective	3
Micro 440	Lab in Microbial Phys, Gen & Div	4	Micro 450	Senior Seminar	2
Int. Perspective	International perspectives	3	BBMB 405	Biochemistry II	3
Gen 322 o	Bioinformatics	3	Gen 410	Analytical Genetics	3
Gen 462	Evolutionary Genetics	3			
		16			14