## MICROBIOLOGY UNDERGRADUATE PROGRAM
### Program of Study
#### Degree: BS, Microbiology (Catalog: 2019-2020)

### I) Communications (13 credits)
- Engl 150 (3) and Engl 250 (3)
- Sp Com 212 (3)
- Engl 302 or Engl 309 or Engl 314 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
      - 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) or Micro 115X (2)
- 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)
- MICRO 110 (1) Orientation
- MICRO 302 (3) Biology of Micro
- MICRO 310 (3) Medical Microbiology
- MICRO 320 (4) Molecular and Cellular Bact.
- MICRO 430 (3) Micro Diversity & Ecology or MICRO 477 (3) Bact-Plant Interactions
- MICRO 456 (3) Mycology
- MICRO 450 (2) Capstone Seminar
- MICRO 451 (R) Microbiology Survey

#### Core Laboratory Courses (6 Credits)
- MICRO 302L (1) General Micro Lab
- MICRO 310L (1) Medical Micro Lab
- MICRO 475L (1) Immunology Lab
- 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
- MICRO 353 (3) Intro Parasitology
- MICRO 374 (3) Insects & Our Health
- MICRO 408 (3) Virology
- VDPAM 428 (3) Principles Of Epidemiology
- MICRO 475 (3) Immunology
- MICRO 475L (1) Immunology Lab
- MICRO 517X (3) Gut Microbiome
- MICRO 586 (4) Medical Bacteriology

##### Common Environmental Electives
- PLP 408 (3) Principles of Plant Pathology
- MICRO 430 (3) Micro Diversity & Ecology
- MICRO 456 (3) Mycology
- MICRO 477 (3) Bacteria-Plant interactions
- MICRO 487 (3) Microbial Ecology

##### Common Physiology/Genetics Electives
- MICRO 402 (3) Microbial Genetics
- MICRO 430 (3) Micro Diversity & Ecology

##### Common Food Microbiology Electives
- MICRO 407 (3) Micro Food Safety
- MICRO 419 (3) Foodborne Hazards
- MICRO 420 (3) Food Microbiology
- MICRO 421 (3) Food Microbiology Lab

Other courses upon written request & review by the Undergrad Micro Supervisory Committee.
- MICRO 490 (1-3) Independent Study

### VII) Electives (8-16 credits) Courses to obtain 128 total credit hours
- S  Micro 116X (2) Phage Genome Lab

Minors to Consider: Pharmacology & Toxicology, Food Safety, Genetics, Emerging Global Diseases
## Iowa State University
### College of Agriculture and Life Sciences
#### Microbiology Eight Semester Plan
##### 19-20 Catalog

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Chem 177/177L General Chemistry &amp; Lab</td>
<td>5 Chem 178 General Chemistry</td>
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<tr>
<td>Biol 211/211L Principles of Biology &amp; Lab (or Micro 115)</td>
<td>4 Biol 212/212L Principles of Biology &amp; Lab</td>
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<tr>
<td>Engl 250 or 150 Written Oral Visual and Electronic Comm</td>
<td>3 Stat 101 Statistics</td>
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<tr>
<td>Micro 101 Microbes in Society</td>
<td>3 Micro 302/302L Biology of Microorganisms &amp; Lab</td>
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<tr>
<td>Micro 110 Orientation in Microbiology</td>
<td>1 Micro 116 Bioinformatics</td>
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<tr>
<td>Lib 160 Library Instruction</td>
<td>1 Micro Elective (430, 477 or 456)</td>
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<td>(Learning team classes available)</td>
<td>17 (Learning team classes available)</td>
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<td>Fall</td>
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<tr>
<td>Chem 331/331L Organic Chemistry I &amp;Lab</td>
<td>4 Chem 332 Organic Chemistry II</td>
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<tr>
<td>Bio 313/313L Genetics &amp; Lab</td>
<td>4 *Biol 314 Molecular Cell Biology (or 328 in fall)</td>
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<td>Micro 310/310L Medical Microbiology &amp; Lab</td>
<td>4 Math Math 143, 145 or 165</td>
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<tr>
<td>Sp. Cm 212 Fundamentals of Public Speaking</td>
<td>3 Micro Choice Micro Elective (430, 477 or 456)</td>
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<td>(Learning team classes available)</td>
<td>15 Humanities Humanities (from list)</td>
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<td>16 Humanities (from list)</td>
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<tr>
<td>*Biol 328 Cellular aspects of human diseases (or 314 spring)</td>
<td>BBMB 301 or 316 Biochemistry</td>
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<tr>
<td>Phys 111/111L or Phys 115/115L General Physics I or Phys for Life Sci. with lab</td>
<td>5 Phys 112/112L General Physics II or Micro elective</td>
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<tr>
<td>Math Math 160 or 166 or Stat 301</td>
<td>4 Ethics Ethics (from list)</td>
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<tr>
<td>English 302, 309, 312 or 314</td>
<td>3 Micro 320 Molecular &amp; Cellular Bacteriology</td>
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<td>Micro 451 Microbiology Survey</td>
<td>3 Micro Elective</td>
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<tr>
<td>Social Science Social Science elective</td>
<td>15 Micro 450 Capstone Seminar</td>
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<td>General Electives General Electives</td>
<td>6 US Diversity US Diversity (from list)</td>
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<td>Micro Choice Microbiology Elective</td>
<td>3 Micro Choices Microbiology Electives</td>
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<tr>
<td>Int. Perspective International perspectives (from list)</td>
<td>3 Micro 450 Capstone Seminar</td>
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<td>6 Micro 450 Capstone Seminar</td>
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Courses that work well for summer or study-abroad

*Updated 5/1/19*