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) Senior Seminar
- F MICRO 451 (R) Senior 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 586 (4) Medical Bacteriology
Common Environmental Electives
- F/S PLP 408 (3) Principles of Plant Pathology
- F MICRO 410 (2) Insect-Virus Interactions
- S* MICRO 430 (3) Micro Diversity & Ecology
- F MICRO 456 (3) Mycology
- S* MICRO 477 (3) Bacteria-Plant interactions
- S MICRO 485 (3) Soil Micro Ecology
- 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

Minors to Consider: Food Safety
Emerging Global Diseases

F=offered fall semester S=offered spring semester, F*/S* = offered alternate fall or spring
# Microbiology Eight Semester Plan

**Iowa State University**  
**College of Agriculture**  
**17-18 Catalog**

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td>Chem 177/177L</td>
<td>General Chemistry &amp; Lab</td>
</tr>
<tr>
<td>Biol 211/211L</td>
<td>Principles of Biology &amp; Lab</td>
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<tr>
<td>Engl 250 or 150</td>
<td>Written Oral Visual and Electronic Comm</td>
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<tr>
<td>Micro 101</td>
<td>Microbes in Society</td>
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<tr>
<td>Micro 110</td>
<td>Orientation in Microbiology</td>
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<tr>
<td>Lib 160</td>
<td>Library Instruction</td>
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**Fall**

| Chem 331/331L | Organic Chemistry I & Lab | 4 | Chem 332/332L | Organic Chemistry II | 3 |
| Micro 310/310L | Medical Microbiology & Lab | 4 | Micro Choice | Micro Environmental or Elective | 3 |
| Math 143, 145 or Calc | Trig, Pre-Calc, or Calculus | 4 | Biol 313/313L | Genetics & Lab | 4 |
| Sp Cm 212     | Fundamentals of Public Speaking | 3 | Humanities | Humanities (from list) | 3 |
|               |                             | 15 | Math or Stat | Calculus (I or II) or Intermediate Stats (301) | 4 |
|               |                             | 17 |                |                |   |

**Fall**

| Biol 314 or Biol 328 | Cell Biology or cellular aspects of human diseases | 3 | Micro 320 | Molecular and Cellular Bacteriology | 4 |
| BBMB 301, 316 or 404 | Biochemistry | 3 | Phys 112/112L | General Physics II or elective | 5 |
| Phys 111/111L or Phys 115/115L | General Physics I or Phys for Life Sci. with lab | 5 | Engl Choice | Advanced English – 302, 309, 312 or 314 | 3 |
| Ethics          | Ethics | 3 | US Diversity | US Diversity (from list) | 3 |
| Micro 451       | Microbiology Survey | R |                |                |   |
| General Elective | General Elective | 3 |                |                |   |
|               |                             | 17 |                |                |   |

**Fall**

| Micro 440 | Lab in Microbial Phys, Gen & Div. | 4 | US Diversity | US Diversity (from list) | 3 |
| Micro Choice | Microbiology Elective | 3 | Micro 450 | Capstone Seminar | 2 |
| Int. Perspective | International perspectives | 3 | Micro Choices | Microbiology Electives | 6 |
| General Electives | General Electives | 6 | General Elective | General Elective | 3 |
|               |                             | 16 |                |                |   |

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