I) ISU Requirements (Total of 13 credits)
   - International Perspective (3) (see approved CALS list)
   - US Diversity (3) (see approved CALS list)
   - Communications
     - Engl 150 (3) and Engl 250 (3)
     - Lib 160 (1)

II) CALS Requirements (Total of 9 credits)
   - Humanities (3) see CALS approved list
   - Social Science (3) see CALS approved list
   - Ethics (3) see CALS approved list

III) ISU or CALS & Microbiology (Total of 58 credits)

Math (10 Credits)
   - 1) Stat 101 (4) or 104 (3)
   - 2) Math 143 (4/pre-calc) or 145 (3/Trig) or Stat 301 (4) or Math 165 (4/Calculus 1)
   - 3) Math 160 (4/Surv Calc) or 165 (4/Calculus 1) or Math 166 (4/Calculus 2)

Physical Science (27 Credits)
   - 1) Chem 177 (3), 177L (1) Gen. Chem I
   - Chem 178 (3) Gen. Chem II
   - Phys 132/132L (5) Gen. Physics II (Recommended)
   - OR
   - Phys 115/115L (5) Phys for Life Sci. (only if not doing further schooling)
   - 3) Chem 331 (3), 331L (1) Organic Chem I
   - Chem 332 (3) Organic Chem II
   - 4) BBMB 301 (3) OR BBMB 316 (3) Biochemistry
   - OR
   - BBMB 404 (3) AND BBMB 405 (3)

Biological Sciences (15 credits)
   - 1) Biol 211 (3) & Biol 211L (1) or Micro 115 (2/F)
   - 2) Biol 212 (3) and Biol 212L (1)
   - 3) Biol 313 (3) and Biol 313L (1) Genetics
   - 4) Biol 314 (3) or Biol 328 (3/F) Cell Biology

Scientific Communication (6 credits)
   - 1) SP CM 212 (3)
   - 2) English 302, 309, 312, 314 (3) Choose 1

(4) = 4 credits (3) = 3 credits (2) = 2 credits
F=offered fall semester S=offered spring semester,
No designation = offered Fall and Spring
Odd = odd years 2023, 2025, etc.
Even = even year 2022, 2024, etc
5)* Micro 430 & 456 & 477 can count as Micro requirement #5 OR #11, but not both
updated 11/03/2023

IV) Microbiology (Total of 31 credits)

Core Microbiology Courses (16 credits)
   - 1) MICRO 110 (1/F) Orientation
   - 2) MICRO 302 (3) Biology of Microorganisms
   - 3) MICRO 310 (3/F) Medical Microbiology
   - 4) MICRO 320 (4/S) Molecular and Cellular Bact.
   - 5)* MICRO 430 (3/S/odd) Micro Diversity & Ecology
       or Micro 456 (3/F) Mycology
       or MICRO 477 (3/S/even) Bact-Plant Interactions
   - 6) MICRO 450 (2/S) Capstone - Senior Seminar
   - 7) MICRO 451 (R/F) Micro - Junior Survey

Core Laboratory Courses (6 credits)
   - 8) MICRO 302L (1) General Micro Lab
   - 9) MICRO 310L (1/F) Medical Micro Lab
   - Or MICRO 475L (2/S) Immunology Lab
   - 10) MICRO 440 (4) Lab in Microbial Physiology,
        Diversity & Genetics

Microbiology Electives – (9 credits)
   - 11) Choose from the list below (Max 3 cr of lab)

Common Clinical Electives
   - MICRO 353 (3/S) Intro Parasitology
   - MICRO 374 (3/S) Insects & Our Health
   - MICRO 374L (1/S/odd) Insects/Health Lab
   - MICRO 408 (3/F) Virology
   - MICRO 428 (3/S) Principles of Epidemiology
   - MICRO 475 (3/S) Immunology
   - MICRO 475L (2/S) Immunology Lab
   - MICRO 517 (3/F) Gut Microbiome
   - MICRO 586 (4/F) Medical Bacteriology

Common Environmental Electives
   - PLP 408 (3) Principles of Plant Pathology
   - MICRO 456 * (3/F) Mycology
   - MICRO 477 * (3/S/even) Bacteria-Plant interactions
   - MICRO 487 (3/S) Microbial Ecology

Common Physiology/Genetics Electives
   - MICRO 402 (3/F/even) Microbial Genetics
   - MICRO 408 (3/F) Virology
   - MICRO 430 (3/S/odd) Micro Diversity & Ecology

Common Food Microbiology Electives
   - MICRO 407 (3) Micro Food Safety
   - MICRO 419 (3/S/odd) Foodborne Hazards
   - MICRO 420 (3/F) Food Microbiology
   - MICRO 421 (3/S) Food Microbiology Lab

Maximum 490 credits applied toward Micro electives = 3
   - Micro 490A Research (1-3 credits)
   - Micro 490B Literature review (1-3 credits)
   - Micro 490C Lab Teaching Assistant (1 credit)

V) Electives (8-16 credits) Courses to obtain 128 total credit hours
   - Micro 101 (3/F) Microbial World
   - Micro 116 (2/S) Phage Genome Lab
   - Micro 265X (2) Predicting the next epidemic
# Iowa State University
## College of Agriculture and Life Sciences
### Microbiology Eight Semester Plan 23-24 Catalog

<table>
<thead>
<tr>
<th>Fall</th>
<th>Spring</th>
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<tbody>
<tr>
<td><strong>Chem 177/177L</strong> General Chemistry &amp; Lab</td>
<td><strong>Chem 178</strong> General Chemistry</td>
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<tr>
<td><strong>Biol 211/211L</strong> Principles of Biology &amp; Lab (or Micro 115)</td>
<td><strong>Biol 212/212L</strong> Principles of Biology &amp; Lab</td>
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<tr>
<td><strong>Engl 250 or 150</strong> Written Oral Visual and Electronic Comm</td>
<td><strong>Math</strong> Statistics 101 or 104</td>
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<tr>
<td><strong>Micro 101</strong> Microbes in Society</td>
<td><strong>Micro 302/302L</strong> Biology of Microorganisms &amp; Lab</td>
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<tr>
<td><strong>Micro 110</strong> Orientation in Microbiology</td>
<td><strong>Micro 116</strong> Bioinformatics</td>
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<tr>
<td><strong>Lib 160</strong> Library Instruction</td>
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<tr>
<td>(Learning team classes available)</td>
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<tr>
<td><strong>Chem 331/331L</strong> Organic Chemistry I &amp;Lab</td>
<td><strong>Chem 332</strong> Organic Chemistry II</td>
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<tr>
<td><strong>Bio 313/313L</strong> Genetics &amp; Lab</td>
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<tr>
<td><strong>Micro 310/310L</strong> Medical Microbiology &amp; Lab</td>
<td><strong>Math</strong> Math 143, or 145 or 160 or <strong>165</strong></td>
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<tr>
<td><strong>Sp. Cm 212</strong> Fundamentals of Public Speaking</td>
<td><strong>Micro Choice</strong> Environmental Micro (430, 477 or 456)</td>
</tr>
<tr>
<td>(Learning team classes available)</td>
<td><strong>Humanities</strong> Humanities (from list)</td>
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<tbody>
<tr>
<td><strong>Micro 451</strong> Microbiology Survey</td>
<td><strong>BBMB 301 or 316</strong> Biochemistry</td>
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<tr>
<td><strong>Phys 131/131L or Phys 115/115L</strong> General Physics I or Physics for Life Sci. with lab</td>
<td><strong>Phys 132/132L</strong> General Physics II or electives</td>
</tr>
<tr>
<td><strong>Math</strong> Math 160 or <strong>165</strong> or <strong>166</strong> or Stat 301</td>
<td><strong>Ethics</strong> Ethics (from list)</td>
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<tr>
<td><strong>English</strong> 302, 309, 312 or 314</td>
<td><strong>Micro 320</strong> Molecular &amp; Cellular Bacteriology</td>
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<tr>
<td><strong>Social Science</strong> Social Science elective</td>
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<tbody>
<tr>
<td><strong>Micro 440</strong> Lab in Microbial Physio, Gen &amp; Diversity.</td>
<td><strong>General Electives</strong> General Electives or Courses toward Minor</td>
</tr>
<tr>
<td><strong>General Electives</strong> General Electives or Courses toward Minor</td>
<td><strong>US Diversity</strong> <strong>US Diversity (from list)</strong></td>
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<tr>
<td><strong>Micro Choice</strong> Microbiology Elective</td>
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<tr>
<td><strong>Int. Perspective</strong> International perspectives (from list)</td>
<td><strong>Micro 450</strong> Capstone Seminar</td>
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Courses that work well for summer or study-abroad updated 10/10/2023