# Microbiology Undergraduate Program - Program of Study

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

## 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 12 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 50 credits)

### Scientific Communication (6 credits)
- **1)** Speech 212 (3)
- **2)** English 302, 309, 312, 314 (3) Choose 1

### 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 (23 Credits)
- **1)** Chem 177/177L (5) and 178 (3) Inorganic
- **2)** Phys 131/131L (5) and Phys 132/132L (5)
  - General Physics (recommended) OR
  - Phys 115/115L (5) Phys for Life Sci. (only if not doing further schooling)
- **3)** Chem 331/331L (4), and Chem 332 (3) Organic
- **4)** BBMB 301 (3) or BBMB 316 (3) OR
  - BBMB 404 (3) AND BBMB 405 (3)

### Biological Sciences (15 credits)
- **1)** Biol 211 (3) & Biol 211L (1) or Micro 115X (2/F)
- **2)** Biol 212 (3) and Biol 212L (1)
- **3)** Biol 313 (3) and Biol 313L (1) Genetics

## 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
- **10)** MICRO 475L (2/S) Immunology Lab

### 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/even) 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/F) Microbial Ecology
  - **Common Physiology/Genetics Electives**
    - MICRO 402 (3/F/ev) Microbial Genetics
    - MICRO 408 (3/F) Virology
    - MICRO 430 (3/S/odd) Micro Diversity & Ecology
  - **Common Food Microbiology Electives**
    - MICRO 407 (3/S) Micro Food Safety
    - MICRO 420 (3/F) Food Microbiology
    - MICRO 421 (3/S) Food Microbiology Lab

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

## V) Electives (8-16 credits) Courses to obtain 128 total credit hours
- **15)** Micro 101 (3/F) Microbial World
- **16)** Micro 116 (2/S) Phage Genome Lab
- **17)** Micro 265X (2) Predicting the next epidemic

Minors to Consider: Pharmacology & Toxicology, Food Safety, Genetics, Global Health, etc.

(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 5/11/21
<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>Chem 178, General Chemistry</td>
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<tr>
<td>Biol 211/211L, Principles of Biology &amp; Lab (or Micro 115)</td>
<td>Biol 212/212L, Principles of Biology &amp; Lab</td>
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<td>Engl 250 or 150, Written Oral Visual and Electronic Comm</td>
<td>Stat 101, Statistics</td>
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<tr>
<td>Micro 101, Microbes in Society</td>
<td>Micro 302/302L, Biology of Microorganisms &amp; Lab</td>
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<tr>
<td>Micro 110, Orientation in Microbiology</td>
<td>Micro 116, Bioinformatics</td>
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<tr>
<td>Lib 160, Library Instruction</td>
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<td>(Learning team classes available)</td>
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<td>Chem 331/331L, Organic Chemistry I &amp;Lab</td>
<td>Chem 332, Organic Chemistry II</td>
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<tr>
<td>Bio 313/313L, Genetics &amp; Lab</td>
<td>Biol 314 or 328(F), Molecular Cell Biology (328 - Diseases)</td>
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<tr>
<td>Micro 310/310L, Medical Microbiology &amp; Lab</td>
<td>Math, Math 143, 145 or 165</td>
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<td>Sp. Cm 212, Fundamentals of Public Speaking</td>
<td>Micro Choice, Environmental Micro (430, 477 or 456)</td>
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<td>Micro 451, Microbiology Survey</td>
<td>BBMB 301 or 316, Biochemistry</td>
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<tr>
<td>Phys 131/131L or 115/115L, General Physics I or Physics for Life Sci. with lab</td>
<td>Phys 132/132L, General Physics II or electives</td>
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<td>Math, Math 160 or Math 301 or Stat 301</td>
<td>Ethics, Ethics (from list)</td>
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<td>English, 302, 309, 312 or 314</td>
<td>Micro 320, Molecular &amp; Cellular Bacteriology</td>
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<td>Social Science, Social Science electives</td>
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<td>Micro 440, Lab in Microbial Physio, Gen &amp; Diversity.</td>
<td>General Electives, General Electives or Courses toward Minor</td>
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<td>US Diversity, US Diversity (from list)</td>
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<td>Micro Choice, Microbiology Elective</td>
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<tr>
<td>Int. Perspective, International perspectives (from list)</td>
<td>Micro 450, Capstone Seminar</td>
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Courses that work well for summer or study-abroad updated 3/22/21