Curriculum for Liberal Education Requirements (38 credits)²

I. Writing and Discourse (6 credits)

ENGL 1105 First-Year Writing (3)         ENGL 1106 First-Year Writing (3)

II. Ideas, Cultural Traditions and Values (6 credits)

(3)                                      (3)

III. Society and Human Behavior (6 credits)

(3)                                      (3)

IV. Scientific Reasoning and Discovery (8 Credits): Completed within Biological Sciences Major Required Courses

BIOL 1105 Principles of Biology*       (3)   BIOL 1106 Principles of Biology*       (3)
BIOL 1115 Biol Principles Lab**       (1)   BIOL 1116 Biol Principles Lab**        (1)

V. Quantitative and Symbolic Reasoning: Completed within Biological Sciences Major Required Courses

MATH 1025 Elementary Calculus*         (3)   MATH 1026 Elementary Calculus*         (3)

VI. Creativity and Aesthetic Experience (3 credits)  

(3)

VII. Critical Issues in a Global Context (3 Credits)

(3)

Core Microbiology Requirements (28-29 credits)²

1. Complete the following required courses:

BIOL 2004 Genetics                     (3)   BIOL 4624 Microbial Genetics       (3)
BIOL 2104 Cell & Molecular Biol        (3)   BIOL 4634 Microbial Physiology     (3)
BIOL 2604 General Microbiology"       (3)   BIOL 4764 Micro Senior Seminar     (2)
BIOL 2614 General Micro Lab¹           (1)   BCHM 3114 Biochemistry for Biotech (3)

2. Complete one of the following:

BIOL 3774 Molecular Biol               (3)   & BIOL 3104 Cell & Mol Biology Lab  (1)
BIOL 4844 Microbial Gen & Phys Lab     (3)

3. Complete one of the following lecture & lab combinations:

BIOL 4874 Pathogenic Bacteriology      (3)   & BIOL 4724 Pathogenic Bact Lab     (1)
BIOL 4704 Immunology                   (3)   & BIOL 4714 Immunology Lab          (1)

Core Restricted Elective Courses (9-12 credits)²

1. Complete two of the following electives with lab (if not taken above):

BIOL 3454 Introductory Parasitology    (4)   
BIOL 3604 Food Microbiology*           (4)   
BIOL 4164 Environmental Microbiology*  (3)   
BIOL 4644 Microbial Gen & Phys Lab    (3)   
BIOL 4674 Pathogenic Bacteriology     (3)   & BIOL 4724 Pathogenic Bact Lab     (1)
BIOL 4704 Immunology                   (3)   & BIOL 4714 Immunology Lab          (1)
BIOL 4824 Bioinformatics Methods       (3)   
BIOL 4994 Undergraduate Research*      (4)
2. Complete one of the following electives (if not taken above):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 3454</td>
<td>Introductory Parasitology</td>
<td>(4)</td>
</tr>
<tr>
<td>BIOL 3604</td>
<td>Food Microbiology</td>
<td>(4)</td>
</tr>
<tr>
<td>BIOL 4164</td>
<td>Environmental Microbiology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 4644</td>
<td>Microbial Gen &amp; Phys Lab</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 4664</td>
<td>Virology</td>
<td>(3)</td>
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<tr>
<td>BIOL 4674</td>
<td>Pathogenic Bacteriology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 4704</td>
<td>Immunology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 4734</td>
<td>Inflammation Biology</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 4804</td>
<td>Prokaryotic Diversity</td>
<td>(3)</td>
</tr>
<tr>
<td>BIOL 4824</td>
<td>Bioinformatics Methods</td>
<td>(3)</td>
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<tr>
<td>BIOL 4994</td>
<td>Undergraduate Research</td>
<td>(4)</td>
</tr>
<tr>
<td>FST 4634</td>
<td>Epidem Foodborne Disease</td>
<td>(3)</td>
</tr>
<tr>
<td>PPWS 4114</td>
<td>Micro Forensics / Biosec</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Core Science and Math Requirements (28 Credits)**

<table>
<thead>
<tr>
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<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1004</td>
<td>Biology Orientation Seminar</td>
<td>(1)</td>
</tr>
<tr>
<td>CHEM 1035</td>
<td>General Chem°</td>
<td>(3)</td>
</tr>
<tr>
<td>CHEM 1045</td>
<td>General Chem Lab°</td>
<td>(1)</td>
</tr>
<tr>
<td>CHEM 2535</td>
<td>Organic Chem°</td>
<td>(3)</td>
</tr>
<tr>
<td>CHEM 2545</td>
<td>Organic Chem Lab°</td>
<td>(1)</td>
</tr>
<tr>
<td>PHYS 2205</td>
<td>General Physics°</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS 2215</td>
<td>General Physics Lab°</td>
<td>(1)</td>
</tr>
<tr>
<td>STAT 3615</td>
<td>Biological Statistics</td>
<td>(3)</td>
</tr>
</tbody>
</table>

**Curriculum for Liberal Education Requirements:**

- Core Microbiology Requirements: 38 Credits
- Core Restricted Elective Courses: 28-29 Credits
- Core Science and Math Requirements: 9-12 Credits
- Total Free Electives: 28 Credits
- Total Credits Required for Graduation: 120 Credits

**NOTE:**
1. Students must earn a grade of "C" or better in BIOL 1105, 1106, 1115, 1116, 2604, 2614, CHEM 1035, CHEM 1036, or the equivalent.

2. This checklist does not contain any hidden prerequisites.

3. BIOL 1004 is required but will not count as major elective credit or be used to calculate in-major GPA.

4. To count, students must complete two semesters of BIOL 4994 for a combined total of at least 4 credits.

All courses taken to fulfill Core Microbiology, Core Restricted Elective, and Core Science and Math requirements (except BIOL 1004) will be used to calculate in-major GPA.

Students must have an in-major and overall GPA of 2.0 to graduate.
Three years of a single foreign language in high school is required to meet the College of Science Foreign Language Requirement

a. Take the equivalent of an 1106 foreign language at an accredited university or community college. (Note: A student who has not completed two (2) units of a single foreign language in high school must earn six (6) semester hours of college level credit in a foreign language (i.e., both 1105 and 1106). These six hours are in addition to the 120 hours required for graduation.

b. Credit by exam for a foreign language. The credit by exam option is available only to students who have gained knowledge of a foreign language without the benefit of formal training.

c. Students whose native language is not English may be exempted from the foreign language through demonstrating satisfactory knowledge of the foreign language as prescribed by the Department of Foreign Languages. (No credit will be awarded)

**Acceptable Substitutions**

BIOL 1105: BIOL 1005 General Biology  
BIOL 1106: BIOL 1006 General Biology  
BIOL 1115: BIOL 1015 General Biology Lab OR BIOL 1125 Biol Principles Lab  
BIOL 1116: BIOL 1016 General Biology Lab OR BIOL 1126 Biol Principles Lab  
BIOL 1105, 1115: BIOL 1205H Honors Biology (4)  
BIOL 1106, 1116: BIOL 1206H Honors Biology (4)  
BIOL 2604: BIOL 2604H Honors General Microbiology  
CHEM 1035-1036: CHEM 1055-1056 General Chemistry for Majors  
CHEM 1045-1046: CHEM 1065-1066 General Chemistry Lab for Majors  
CHEM 2535-2536: CHEM 2565-2566 Principles of Organic Chemistry  
CHEM 2545-2546: CHEM 2555-2556 Organic Synthesis and Techniques Lab  
PHYS 2205, 2215: PHYS 2305 Foundations of Physics I  
PHYS 2206, 2216: PHYS 2306 Foundations of Physics II  
MATH 1025: MATH 1016 Elem Calculus w/ Trig OR MATH 1205 Calculus OR MATH 1225 Calculus of a Single Variable OR MATH 1525 Elem Calculus w/Matrices  
MATH 1026: MATH 2015 Elem Calculus w/ Trig OR MATH 1206 Calculus OR MATH 1226 Calculus of a Single Variable OR MATH 1526 Elem Calculus w/Matrices

**Cross-listed Courses on this Checksheet**

CSES/ENSC/BIOL 4164: Environmental Microbiology  
FST/BIOL 3804: Food Microbiology

**Satisfactory Progress Toward Degree**

1. Students must earn a grade of "C" or better in BIOL 1105, 1106, 1115, 1116, CHEM 1035, CHEM 1036 or equivalent upon attempting 45 credit hours (including transfer credit, advance placement or IB credit, advance standing credit, credit by examination, courses taken P/F, and courses completed with a grade of "W"). Only two attempts are allowed for each course.

2. Students must achieve an overall GPA of 2.0 and in-major GPA of 2.2 upon attempting 45 credit hours (including transfer credit, advance placement or IB credit, advance standing credit, credit by examination, courses taken P/F, and courses completed with a grade of "W").

3. All courses taken to fulfill Core Microbiology, Core Restricted Elective, and Core Science and Math requirements (except BIOL 1004) will be used to calculate in-major GPA.

4. These courses must be completed by the time the student has attempted 72 hours:
   
   BIOL 1105, 1106, 1115, 1116 or Equivalent  
   CHEM 1035, 1036, 1045, 1046 or Equivalent  
   CHEM 2535, 2536, 2545, 2546 or Equivalent  
   MATH 1025, 1026 or Equivalent