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 Biology¹* (3) ______ BIOL 1106 Principles of Biology¹* (3) ______
BIOL 1115 Principles of Biol Lab¹* (1) ______ BIOL 1116 Principles of Biol Lab¹* (1) ______

V. Quantitative and Symbolic Reasoning (6 credits): 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 (29-31 credits)*

In accordance with State Council guidelines, courses used to fulfill the SCHEV approved degree core may not also be used to meet Curriculum for Liberal Education or major requirements.

1. Complete the following required courses:

BIOL 2004 Genetics (3) ______ BIOL 4624 Microbial Genetics (3) ______
BIOL 2134 Cell Function Differentiation* (3) ______ BIOL 4634 Microbial Physiology (3) ______
BIOL 2604 General Microbiology¹* (3) ______ BIOL 4764 Microbioogy Senior Seminar (2) ______
BIOL 2614 General Microbiology Lab¹ (2) ______ BCHM 3114 Biochemistry for Biotech (3) ______

2. Complete one of the following:

BIOL 3774 Molecular Biology (3) ______ & BIOL 3104 Cell Molecular Biol Laboratory (1) ______
BIOL 4644 Microbial Genetics & Physiol Lab (3) ______

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

BIOL 4674 Pathogenic Bacteriology (3) ______ & BIOL 4724 Pathogenic Bacteriology Lab (2) ______
BIOL 4704 Immunology (3) ______ & BIOL 4714 Immunology Laboratory (1) ______
Core Restricted Elective Courses (9-13 credits)²

1. Complete two of the following electives with lab (if not taken above):
   BIOL 3254 Med and Vet Entomology³ (3) & BIOL 3264 Med and Vet Ent Lab³ (1)
   BIOL 3454 Introductory Parasitology (4)
   BIOL 3604 Food Microbiology³ (4)
   BIOL 4164 Environmental Microbiology³ (3)
   BIOL 4644 Microbial Genetics & Physical Lab (3)
   BIOL 4674 Pathogenic Bacteriology (3) & BIOL 4724 Pathogenic Bacteriology Lab (2)
   BIOL 4704 Immunology (3) & BIOL 4714 Immunology Laboratory (1)
   BIOL 4824 Bioinformatics Methods (3)
   BIOL 4994 Undergraduate Research** (4)
   PPWS 4104 Plant Pathology (4)

2. Complete one of the following electives (if not taken above):
   BIOL 3254 Med and Vet Entomology³ (3)
   BIOL 3454 Introductory Parasitology (4)
   BIOL 3604 Food Microbiology³ (4)
   BIOL 4164 Environmental Microbiology³ (3)
   BIOL 4644 Microbial Genetics & Physical Lab (3)
   BIOL 4664 Virology (3)
   BIOL 4674 Pathogenic Bacteriology (3)
   BIOL 4704 Immunology (3)
   BIOL 4734 Inflammation Biology (3)
   BIOL 4804 Prokaryotic Diversity (3)
   BIOL 4824 Bioinformatics Methods (3)
   BIOL 4994 Undergraduate Research** (4)
   FST 4634 Epidemiology Foodborne Disease (3)
   PPWS 4104 Plant Pathology (4)
   PPWS 4114 Microbe Forensics / Biosecurity (3)

Core Science and Math Requirements (28 Credits)²

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 1004</td>
<td>Biology Orientation Seminar³</td>
<td>(1)</td>
</tr>
<tr>
<td>CHEM 1035</td>
<td>General Chemistry³</td>
<td>(3)</td>
</tr>
<tr>
<td>CHEM 1045</td>
<td>General Chemistry Lab³</td>
<td>(1)</td>
</tr>
<tr>
<td>CHEM 2535</td>
<td>Organic Chemistry³</td>
<td>(3)</td>
</tr>
<tr>
<td>CHEM 2545</td>
<td>Organic Chemistry Lab³</td>
<td>(1)</td>
</tr>
<tr>
<td>PHYS 2205</td>
<td>General Physics³</td>
<td>(3)</td>
</tr>
<tr>
<td>PHYS 2215</td>
<td>General Physics Laboratory³</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: 38 Credits
Core Microbiology Requirements: 29-31 Credits
Core Restricted Elective Courses: 9-13 Credits
Core Science and Math Requirements: 28 Credits
Total Free Electives: 11-16 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. Only two attempts, including course withdrawals with grade of "W", are allowed for each course.

2 Some courses listed on this checksheet may have prerequisites; please consult the University Course Catalog or check with your advisor.

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 BIOL courses and 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.

Informational notes for MICB students:
a. if you are also enrolled as a BIOL (no option) student, you may count a maximum of 9 credits from the following courses toward the 22 required BIOL elective credits (section 2c of BIOL checksheet): BIOL 3104, 3774, 3454, 4164, 4604, 4624, 4634, 4644, 4664, 4674, 4704, 4714, 4734, 4804, 4824, 4994, BCHM 3114, PPWS 4114, and FST 4634.
b. if you are also enrolled as a Biomedical (BIOM) Option student, you may count a maximum of 3 courses from the following courses as Biomedical Option electives: BIOL 3774, 3454, 4664, 4674, 4704, 4734, 4824, BCHM 3114.

*Acceptable Substitutions

BIOL 1105: BIOL 1005 General Biology
BIOL 1106: BIOL 1006 General Biology
BIOL 1115: BIOL 1015 General Biology Lab OR BIOL 1125 Biological Principles Lab
BIOL 1116: BIOL 1016 General Biology Lab OR BIOL 1126 Biological Principles Lab
BIOL 1105, 1115: BIOL 1205H Honors Biology (4)
BIOL 1106, 1116: BIOL 1206H Honors Biology (4)
BIOL 2134: BIOL 2104 Cell & Molecular Biology
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 I
MATH 1025: MATH 1016 Elem Calculus w/ Trig I 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 II 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
ENT/BIOL 3254: Medical and Veterinary Entomology
ENT/BIOL 3264: Medical and Veterinary Entomology Laboratory
FST/BIOL 3604: 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 BIOL courses and 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
   - MATH 1025, 1026 or Equivalent

College of Science Foreign Language Requirement

Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six semester hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count toward the hours required for graduation. Please consult the Undergraduate Catalog for details.