APPROVED
UNIVERSITY REGISTRAR

**College of Science**
Department of Biological Sciences
For Students Graduating in Calendar Year 2020
Bachelor of Science in Microbiology
Major: Microbiology

## 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[1]* (3) _____ BIOL 1106 Principles of Biology[1]* (3) _____
BIOL 1115 Biol Principles Lab[1]* (1) _____ BIOL 1116 Biol Principles Lab[1]* (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 (29-31 credits)[2]

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 Microbiology[1]* (3) _____ BIOL 4764 Micro Senior Seminar (2) _____
BIOL 2614 General Micro Lab[1] (2) _____ BCHM 3114 Biochemistry for Biotech (3) _____

**2. Complete one of the following:**

BIOL 3774 Molecular Biology (3) _____ & BIOL 3104 Cell & Mol Biology Lab (1) _____
BIOL 4644 Microbial Gen & Phys Lab (3) _____

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

BIOL 4674 Pathogenic Bacteriology (3) _____ & BIOL 4724 Pathogenic Bact Lab (2) _____
BIOL 4704 Immunology (3) _____ & BIOL 4714 Immunology Lab (1) _____

## Core Restricted Elective Courses (9-13 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 | (2) |
| BIOL | 4704 | Immunology | (3) | | & | BIOL | 4714 | Immunology Lab | (1) |
| BIOL | 4824 | Bioinformatics Methods | (3) | | | | | | |
| BIOL | 4994 | Undergraduate Research[4]* | (4) | | | | | | |
| PPWS | 4104 | Plant Pathology | (4) | | | | | | |

**2. Complete one of the following electives (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 | 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]* | (4) |
| FST | 4634 | Epidem Foodborne Disease | (3) |
| PPWS | 4104 | Plant Pathology | (4) |
| PPWS | 4114 | Micro Forensics / Biosec | (3) |

## Core Science and Math Requirements (28 Credits)[2]

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| BIOL | 1004 | Biology Orientation Seminar[3] | (1) | | | | | | |
| CHEM | 1035 | General Chem[1]* | (3) | | CHEM | 1036 | General Chem[1]* | (3) | |
| CHEM | 1045 | General Chem Lab* | (1) | | CHEM | 1046 | General Chem Lab* | (1) | |
| CHEM | 2535 | Organic Chem* | (3) | | CHEM | 2536 | Organic Chem* | (3) | |
| CHEM | 2545 | Organic Chem Lab* | (1) | | CHEM | 2546 | Organic Chem Lab* | (1) | |
| PHYS | 2205 | General Physics* | (3) | | PHYS | 2206 | General Physics* | (3) | |
| PHYS | 2215 | General Physics Lab* | (1) | | PHYS | 2216 | General Physics Lab* | (1) | |
| STAT | 3615 | Biological Statistics | (3) | | | | | | |

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|---|---|
| **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] This checksheet does not contain any hidden prerequisites.

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

[4] To count, students must complete two semesters of BIOL 2994 and/or 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.

***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 2134: BIOL 2104 Cell & Molecular Biology
BIOL 2604: BIOL 2604H Honors General Microbiology
BIOL 4994: BIOL 2994 Undergraduate Research
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 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 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 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

## 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.