

**College of Science**  
Department of Biological Sciences  
For students entering under UG Catalog 2021-2022  
Bachelor of Science in Microbiology  
Major: Microbiology

**Pathways to General Education Requirements (45 credits)**

**Concept 1: Discourse** (9 credits)

1f – Foundational (6 credits)

ENGL 1105 First-Year Writing (3)

ENGL 1106 First-Year Writing (3)

1a – Advanced/Applied (3 credits) \_\_\_\_\_ (3)

**Concept 2: Critical Thinking in the Humanities** (6 credits)

\_\_\_\_\_ (3)

\_\_\_\_\_ (3)

**Concept 3: Reasoning in the Social Sciences** (6 credits)

\_\_\_\_\_ (3)

\_\_\_\_\_ (3)

**Concept 4: Reasoning in the Natural Sciences** (6 credits)

BIOL 1105 Principles of Biology<sup>1\*</sup> (3)

BIOL 1106 Principles of Biology<sup>1\*</sup> (3)

**Concept 5: Quantitative and Computational Thinking** (9 credits)

1f – Foundational (6 credits)

MATH 1025 Elementary Calculus\* (3)

MATH 1026 Elementary Calculus\* (3)

1a – Advanced/Applied (3 credits)

STAT 3615 Biological Statistics<sup>#</sup> (3)

**Concept 6: Critique and Practice in Design and the Arts** (6 credits = 3 design + 3 arts, or 6 integrated design/arts)

\_\_\_\_\_ (3) Arts

\_\_\_\_\_ (3) Design

**Concept 7: Critical Analysis of Identity and Equity in the United States** (3 credits)

\_\_\_\_\_ (3)

### **Microbiology Degree Core Requirements (29-32 credits)**

1. Complete the following required courses:

BIOL 2004 Genetics <sup>#</sup> (3)	BIOL 4624 Microbial Genetics <sup>#</sup> (3)
BIOL 2134 Cell Function Differentiation <sup>#</sup> (3)	BIOL 4634 Microbial Physiology <sup>#</sup> (3)
BIOL 2604 General Microbiology <sup>#1*</sup> (3)	BIOL 3764 Careers in Microbiology <sup>#</sup> (3)
BIOL 2614 General Microbiology Lab <sup>#1</sup> (1-2)	BCHM 3114 Biochemistry for Biotech <sup>**</sup> (3)

2. Complete one of the following:

BIOL 3774 Molecular Biology<sup>#</sup> (3) & BIOL 3104 Cell Molecular Biol Laboratory<sup>#</sup> (1)

**OR**

BIOL 4644 Microbial Genetics & Physiol Lab<sup>#</sup> (3)

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

BIOL 4674 Pathogenic Bacteriology<sup>#</sup> (3) & BIOL 4724 Pathogenic Bacteriology Lab<sup>#</sup> (2)

**OR**

BIOL 4704 Immunology<sup>#</sup> (3) & BIOL 4714 Immunology Laboratory<sup>#</sup> (1)

### **Core Restricted Elective Courses (9-13 credits)**

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

BIOL 3254 Med and Vet Entomology<sup>#</sup> (3) & BIOL 3264 Med & Vet Entomology Lab<sup>#</sup> (1)  
 BIOL 3454 Introductory Parasitology<sup>#</sup> (4)  
 BIOL 3604 Food Microbiology<sup>#</sup> (4)  
 BIOL 4164 Environmental Microbiology (3)  
 BIOL 4644 Microbial Genetics & Physiol Lab<sup>#</sup> (3)  
 BIOL 4674 Pathogenic Bacteriology<sup>#</sup> (3) & BIOL 4724 Pathogenic Bacteriology Lab<sup>#</sup> (2)  
 BIOL 4704 Immunology<sup>#</sup> (3) & BIOL 4714 Immunology Laboratory<sup>#</sup> (1)  
 BIOL 4824 Bioinformatics Methods<sup>#</sup> (3)  
 BIOL 4994 Undergraduate Research<sup>2\*</sup> (4)  
 PPWS 4104 Plant Pathology<sup>#</sup> (4)

2. Complete **one** of the following electives (if not taken above):

BIOL 3254 Med & Vet Entomology <sup>#</sup> (3)	BIOL 4734 Inflammation Biology <sup>#</sup> (3)
BIOL 3454 Introductory Parasitology <sup>#</sup> (4)	BIOL 4804 Prokaryotic Diversity <sup>#</sup> (3)
BIOL 3604 Food Microbiology <sup>#</sup> (4)	BIOL 4824 Bioinformatics Methods <sup>#</sup> (3)
BIOL 4164 Environmental Microbiology <sup>#</sup> (3)	BIOL 4994 Undergraduate Research <sup>2*</sup> (4)
BIOL 4644 Microbial Genetics & Physiol Lab <sup>#</sup> (3)	FST 4634 Epidemiology Foodborne Disease <sup>#</sup> (3)
BIOL 4664 Virology <sup>#</sup> (3)	PPWS 4104 Plant Pathology <sup>#</sup> (4)
BIOL 4674 Pathogenic Bacteriology <sup>#</sup> (3)	PPWS 4114 Microbe Forensics / Biosecurity <sup>#</sup> (3)
BIOL 4704 Immunology <sup>#</sup> (3)	

### **Core Science and Math Requirements (27 Credits)**

BIOL 1004 Biology Orientation Seminar <sup>3</sup> (1)	CHEM 2536 Organic Chemistry <sup>**</sup> (3)
BIOL 1115 Principles of Biology Lab <sup>1*</sup> (1)	CHEM 2545 Organic Chemistry Lab <sup>**</sup> (1)
BIOL 1116 Principles of Biology Lab <sup>1*</sup> (1)	CHEM 2546 Organic Chemistry Lab <sup>**</sup> (1)
CHEM 1035 General Chemistry <sup>1*</sup> (3)	PHYS 2205 General Physics <sup>**</sup> (3)
CHEM 1036 General Chemistry <sup>1*</sup> (3)	PHYS 2206 General Physics <sup>**</sup> (3)
CHEM 1045 General Chemistry Lab <sup>*</sup> (1)	PHYS 2215 General Physics Laboratory <sup>**</sup> (1)
CHEM 1046 General Chemistry Lab <sup>*</sup> (1)	PHYS 2216 General Physics Laboratory <sup>**</sup> (1)
CHEM 2535 Organic Chemistry <sup>**</sup> (3)	

<b>Pathways to General Education Requirements:</b>	<b>45 Credits</b>
<b>Core Microbiology Requirements:</b>	<b>29-32 Credits</b>
<b>Core Restricted Elective Courses:</b>	<b>9-13 Credits</b>
<b>Core Science and Math Requirements:</b>	<b>27 Credits</b>
<b>Total Free Electives:</b>	<b>3-10 Credits</b>
<b>Total Credits Required for Graduation:</b>	<b>120 Credits</b>

**Notes:**

Students must have an in-major and overall GPA of 2.0 to graduate.

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.

<sup>1</sup> 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.

<sup>2</sup> To count, students must complete two semesters of BIOL 4994 taken A-F for a combined total of at least 4 credits.

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

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

Informational notes for Microbiology B.S. 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, 3604, 4164, 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**

<u>Required Course</u>	<u>Acceptable Substitution(s)</u>
BIOL 1105, 1115:	BIOL 1205H Honors Biology (4)
BIOL 1106, 1116:	BIOL 1206H Honors Biology (4)
BIOL 2604:	BIOL 2604H Honors General Microbiology
BCHM 3114:	BCHM 4115 General Biochemistry (4)
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
PHYS 2206, 2216:	PHYS 2306 Foundations of Physics
MATH 1025:	MATH 1225 Calculus of a Single Variable
MATH 1026:	MATH 1226 Calculus of a Single Variable

**Cross listed Courses on this Checksheet**

ENT/BIOL 3254: Med & Vet Entomology  
ENT/BIOL 3264: Med & Vet Entomology Lab  
FST/BIOL 3604: Food Microbiology  
CSES/ENSC/BIOL 4164: Environmental 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, advanced 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. The following 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.