

**College of Science**  
Department of Biological Sciences  
For students entering under UG Catalog 2023-2024  
Bachelor of Science in Biological Sciences  
Major: Biological Sciences  
Option: Biomedical

**Pathways 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)

### **BIOL Degree Core Requirements (20 credits)**

BIOL 1115 Principles of Biology Lab <sup>1*</sup> (1)	BIOL 2704 Evolutionary Biology <sup>**</sup> (3)
BIOL 1116 Principles of Biology Lab <sup>1*</sup> (1)	BIOL 2804 Ecology <sup>**</sup> (3)
BIOL 2004 Genetics <sup>#</sup> (3)	CHEM 1035 General Chemistry <sup>1*</sup> (3)
BIOL 2134 Cell Function and Differentiation <sup>#</sup> (3)	CHEM 1036 General Chemistry <sup>1*</sup> (3)

### **Biological Sciences Major Requirements (19 credits)**

BIOL 1004 Biology Orientation Seminar <sup>2*</sup> (1)	CHEM 2546 Organic Chemistry Lab <sup>**</sup> (1)
CHEM 1045 General Chemistry Lab <sup>*</sup> (1)	PHYS 2205 General Physics <sup>**</sup> (3)
CHEM 1046 General Chemistry Lab <sup>*</sup> (1)	PHYS 2206 General Physics <sup>**</sup> (3)
CHEM 2535 Organic Chemistry <sup>**</sup> (3)	PHYS 2215 General Physics Lab <sup>**</sup> (1)
CHEM 2536 Organic Chemistry <sup>**</sup> (3)	PHYS 2216 General Physics Lab <sup>**</sup> (1)
CHEM 2545 Organic Chemistry Lab <sup>**</sup> (1)	

### **Biomedical Option Requirements (4-5 credits)**

BIOL 2604 General Microbiology <sup>#</sup> (3)	BIOL 2614 General Microbiology Lab <sup>#</sup> (1-2)
---	---

### **Biomedical Option Electives (18-25 credits)<sup>3</sup>**

1. Students must complete two **Basic Biomedical Elective** courses (6 credits):

BIOL 3514 Introduction to Histology <sup>4#</sup> (3)	BIOL 4704 Immunology <sup>4#</sup> (3)
BIOL 3774 Molecular Biology <sup>#</sup> (3)	BIOL 4824 Bioinformatics Methods <sup>#</sup> (3)
BIOL 4104 Developmental Biology <sup>#</sup> (3)	BIOL 4844 Proteomics Mass Spectrometry <sup>#</sup> (3)
BIOL 4134 Evolutionary Genetics <sup>#</sup> (3)	BIOL 4884 Cell Biology <sup>#</sup> (3)
BIOL 4664 Virology <sup>4#</sup> (3)	BIOL 4994 Undergraduate Research (A-F) <sup>5</sup> (3)
BIOL 4684 Microbiomes <sup>4#</sup> (3)	BCHM 3114 Biochem for Biotech <sup>#</sup> (3)

2. Students must complete two **Biomedical Systems Elective** courses (6 credits):

BIOL 1054 Human Biol: Cncpts Curr Issues (3)	BIOL 4704 Immunology <sup>4#</sup> (3)
BIOL 3134 Human Genetics <sup>#</sup> (3)	BIOL 4994 Undergraduate Research (A-F) <sup>5</sup> (3)
BIOL 3404 Introductory Animal Physiology <sup>4#</sup> (3)	NEUR 2025 Intro to Neuroscience <sup>#</sup> (3)
BIOL 3514 Introduction to Histology <sup>4#</sup> (3)	NEUR 2026 Intro to Neuroscience <sup>#</sup> (3)
BIOL 4554 Neurochemical Regulation <sup>#</sup> (3)	PSYC 2064 Intro Neuroscience of Behavior <sup>#</sup> (3)
BIOL 4664 Virology <sup>4#</sup> (3)	PSYC 4064 Physiological Psychology <sup>#</sup> (3)
BIOL 4684 Microbiomes <sup>4#</sup> (3)	

3. Students must complete two **Disease Systems Elective** courses (6-7 credits):

BIOL 1024 Cancer Causes Treatment Costs (3)	BIOL 4704 Immunology <sup>4#</sup> (3)
BIOL 3254 Med & Vet Entomology <sup>#</sup> (3)	BIOL 4734 Inflammation Biology <sup>#</sup> (3)
BIOL 3454 Introductory Parasitology <sup>#</sup> (4)	BIOL 4854 Cytogenetics <sup>#</sup> (3)
BIOL 4564 Infectious Disease Ecology <sup>#</sup> (3)	BIOL 4864 Clinical Biology <sup>#</sup> (3)
BIOL 4664 Virology <sup>4#</sup> (3)	BIOL 4874 Cancer Biology <sup>#</sup> (3)
BIOL 4674 Pathogenic Bacteriology <sup>#</sup> (3)	
BIOL 4684 Microbiomes <sup>4#</sup> (3)	

4. Students must complete two **laboratory courses** from the following list (0-7 credits<sup>6</sup>):

BIOL 3104 Cell Molecular Biol Laboratory <sup>#</sup> (1)	BIOL 4714 Immunology Laboratory <sup>#</sup> (1)
BIOL 3264 Med & Vet Entomology Lab <sup>#</sup> (1)	BIOL 4724 Pathogenic Bacteriology Lab <sup>#</sup> (2)
BIOL 3454 Introductory Parasitology <sup>#</sup> (4)	BIOL 4824 Bioinformatics Methods <sup>#</sup> (3)
BIOL 3514 Introduction to Histology <sup>#</sup> (3)	NEUR 2035 Neuroscience Laboratory <sup>#</sup> (1)

<b>Degree / Major Requirements</b>	<b>20 Credits</b>
<b>Biological Sciences Major Requirements</b>	<b>19 Credits</b>
<b>Biomedical Option Requirements</b>	<b>4-5 Credits</b>
<b>Biomedical Option Electives</b>	<b>18-25 Credits</b>
<b>Total Pathways General Education Requirements:</b>	<b>45 Credits</b>
<b>Total Free Electives</b>	<b>6-14 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 (except 1004, 1214 and 3814), any course taken to fulfill Biomedical Option elective credit, and all required CHEM, MATH, PHYS and STAT courses 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, 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> BIOL 1004 is required but will not be used to calculate in-major GPA.

<sup>3</sup> Biomedical Option students also enrolled in the Microbiology major (no option) may count a maximum of three of the following courses as Biomedical Option electives: BIOL 3774, 3454, 4664, 4674, 4704, 4734, 4824, BCHM 3114. Biomedical Option students also enrolled in the Microbiology Biomedical Option may count a maximum of two of the following courses as Biomedical Option electives: BIOL 3774, 3454, 4664, 4674, 4704, 4734, BCHM 3114.

<sup>4</sup> A given elective course will count toward **only one** Biomedical Option Elective section.

<sup>5</sup> A 3-credit BIOL 4994 experience taken for grade of A-F may count EITHER toward Biomedical elective section 1 OR 2.

<sup>6</sup> A course listed as both a Biomedical Option Elective (either section 1, 2 or 3) and listed in the laboratory section (4) may count toward both that Biomedical Option Elective section and the laboratory course requirement.

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

**\*Acceptable Substitutions**

<u>Required Course</u>	<u>Acceptable Substitution(s)</u>
BIOL 1004:	Any approved First-Year Experience (FYE) course
BIOL 1105, 1115:	BIOL 1205H Honors Biology (4)
BIOL 1106, 1116:	BIOL 1206H Honors Biology (4)
BIOL 2604:	BIOL 2604H Honors General Microbiology
BIOL 2704:	BIOL 2704H Honors Evolutionary Biology
BIOL 2804:	BIOL 2804H Honors Ecology
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
NEUR 2025-2026:	APSC 2025-2026 Introduction to Neuroscience

**Cross listed Courses on this Checksheet**

ALS/BIOL 4554: Neurochemical Regulation  
 ENT/BIOL 3254: Med & Vet Entomology  
 ENT/BIOL 3264: Med & Vet Entomology Lab

**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 (except 1004, 1214 and 3814), any course taken to fulfill Biological Sciences elective credit, and all required CHEM, MATH, PHYS, and STAT courses will be used to calculate in-major GPA.

**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.