

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: Biology Education (BSED)

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^{1*} (3)

BIOL 1106 Principles of Biology^{1*} (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[#] (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 ^{1*} (1)	BIOL 2704 Evolutionary Biology [#] (3)
BIOL 1116 Principles of Biology Lab ^{1*} (1)	BIOL 2804 Ecology [#] (3)
BIOL 2004 Genetics [#] (3)	CHEM 1035 General Chemistry ^{1*} (3)
BIOL 2134 Cell Function and Differentiation [#] (3)	CHEM 1036 General Chemistry ^{1*} (3)

Biological Sciences Major Requirements (19 credits)

BIOL 1004 Biology Orientation Seminar ^{2*} (1)	CHEM 2546 Organic Chemistry Lab ^{**} (1)
CHEM 1045 General Chemistry Lab [*] (1)	PHYS 2205 General Physics ^{**} (3)
CHEM 1046 General Chemistry Lab [*] (1)	PHYS 2206 General Physics ^{**} (3)
CHEM 2535 Organic Chemistry ^{**} (3)	PHYS 2215 General Physics Lab ^{**} (1)
CHEM 2536 Organic Chemistry ^{**} (3)	PHYS 2216 General Physics Lab ^{**} (1)
CHEM 2545 Organic Chemistry Lab ^{**} (1)	

Biological Sciences Option Requirements (16-17 credits)

BIOL 2304 Plant Biology [#] (3)	BIOL 2614 Microbiology Lab [#] (1-2)
BIOL 2504 General Zoology [#] (3)	BMSP 2135 Human Anatomy and Physiology [#] (3)
BIOL 2604 Microbiology [#] (3)	GEOS 1014 Evolution of Earth-Life System (3)

Biological Sciences Option Electives (at least 8 credits)

Complete at least 8 credits of Biological Sciences electives, including two lab courses:

a. Select **at least two** linked or inclusive laboratory courses from this list:

BIOL 3014 Insect Biology[#] (2) + 3024 Insect Biology Laboratory[#] (2)
BIOL 3104 Cell Molecular Biol Laboratory[#] (1)
BIOL 3114 Field and Laboratory Ecology[#] (1)
BIOL 3204 Plant Taxonomy[#] (3)
BIOL 3254 Med & Vet Entomology[#] (3) + 3264 Med & Vet Entomology Lab[#] (1)
BIOL 3454 Introductory Parasitology[#] (4)
BIOL 3604 Food Microbiology[#] (4)
BIOL 4004 Freshwater Ecology[#] (4)
BIOL 4164 Environmental Microbiology[#] (3)
BIOL 4314 Plant Ecology[#] (4)
BIOL 4354 Aquatic Entomology[#] (4)
BIOL 4404 Ornithology[#] (4)
BIOL 4454 Invertebrate Zoology[#] (4)
BIOL 4484 Freshwater Biomonitoring[#] (4)
BIOL 4624 Microbial Genetics[#] (3) + 4644 Microbial Genetics & Physiol Lab[#] (3)
BIOL 4674 Pathogenic Bacteriology[#] (3) + 4724 Pathogenic Bacteriology Lab[#] (2)
BIOL 4704 Immunology[#] (3) + 4714 Immunology Laboratory[#] (1)
BIOL 4824 Bioinformatics Methods[#] (3)

b. Approved Biological Sciences electives

BIOL 1064 Plants and Civilization (3)	BIOL 3204 Plant Taxonomy [#] (3)
BIOL 1074 How Animals Think (3)	BIOL 3254 Med & Vet Entomology [#] (3)
BIOL 2404 Biotech in Global Society [#] (3)	BIOL 3264 Med & Vet Entomology Lab [#] (1)
BIOL 4454 Invertebrate Zoology [#] (4)	BIOL 3404 Introductory Animal Physiology [#] (3)
BIOL 3014 Insect Biology [#] (2)	BIOL 3454 Introductory Parasitology [#] (4)
BIOL 3024 Insect Biology Laboratory [#] (2)	BIOL 3604 Food Microbiology [#] (4)
BIOL 3104 Cell Molecular Biol Laboratory [#] (1)	BIOL 3774 Molecular Biology [#] (3)
BIOL 3114 Field and Laboratory Ecology [#] (1)	BIOL 3954 Study Abroad (var. credit)
BIOL 3134 Human Genetics [#] (3)	BIOL 4004 Freshwater Ecology [#] (4)

BIOL 4014 Environmental Toxicology# (2)	BIOL 4664 Virology# (3)
BIOL 4104 Developmental Biology# (3)	BIOL 4674 Pathogenic Bacteriology# (3)
BIOL 4114 Global Change Ecology# (3)	BIOL 4684 Microbiomes# (3)
BIOL 4134 Evolutionary Genetics# (3)	BIOL 4704 Immunology# (3)
BIOL 4164 Environmental Microbiology# (3)	BIOL 4714 Immunology Laboratory# (1)
BIOL 4314 Plant Ecology# (4)	BIOL 4724 Pathogenic Bacteriology Lab# (2)
BIOL 4354 Aquatic Entomology# (4)	BIOL 4734 Inflammation Biology# (3)
BIOL 4404 Ornithology# (4)	BIOL 4824 Bioinformatics Methods# (3)
BIOL 4474 Ethology# (3)	BIOL 4844 Proteomics Mass Spectrometry# (3)
BIOL 4484 Freshwater Biomonitoring# (4)	BIOL 4854 Cytogenetics# (3)
BIOL 4554 Neurochemical Regulation# (3)	BIOL 4864 Clinical Biology# (3)
BIOL 4564 Infectious Disease Ecology# (3)	BIOL 4874 Cancer Biology# (3)
BIOL 4574 Social Behav Birds & Mammals# (3)	BIOL 4884 Cell Biology# (3)
BIOL 4594 EEB Senior Seminar# (3)	BIOL 4974 Independent Study (var. credit) ²
BIOL 4624 Microbial Genetics# (3)	BIOL 4994 Undergraduate Research (var. credit) ²
BIOL 4634 Microbial Physiology# (3)	
BIOL 4644 Microbial Genetics & Physiology Lab# (3)	

Degree Core Requirements:	20 Credits
Biological Science Major Requirements:	19 Credits
Biological Science Option Requirements:	16-17 Credits
Biological Science Option Electives:	8 Credits
Total Pathways General Education Requirements:	45 Credits
Total Free Electives:	11-12 Credits
Total Credits Required for Graduation:	120 Credits

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.

¹ 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.

² A combined maximum of 4 credits of BIOL 4974 and/or BIOL 4994 taken as A-F can be used toward Biological Sciences elective credit.

³ 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.

***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
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
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

BIOL/HORT 2304: Plant Biology
ALS/BIOL 2404: Biotechnology in a Global Society
ENT/BIOL 3014: Insect Biology
ENT/BIOL 3024: Insect Biology Laboratory
ENT/BIOL 3254: Med & Vet Entomology
ENT/BIOL 3264: Med & Vet Entomology Lab
FST/BIOL 3604: Food Microbiology
ENSC/BIOL 4164: Environmental Microbiology
ENT/BIOL 4354: Aquatic Entomology
ENT/FiW/BIOL 4484: Freshwater Biomonitoring
ALS/BIOL 4554: Neurochemical Regulation
ALS/BIOL 4574: Soc Behav Birds & Mammals

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.