

College of Science
Department of Biological Sciences
For Students Graduating in Calendar Year 2019
Bachelor of Science in Biological Sciences
Major: Biological Sciences
Option: No Option

Curriculum for Liberal Education Requirements

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 Principles of Biology Lab^{1*} (1) _____ BIOL 1116 Principles of Biology 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) _____

Major Requirements

1. Must complete 12 credits of required courses:

BIOL 2004 Genetics (3) _____ BIOL 2104 Cell & Molecular Biology* (3) _____
BIOL 2704 Evolutionary Biology (3) _____ BIOL 2804 Ecology (3) _____

2. Must complete 22 credits of Biological Sciences electives, including:

- a. at least one of the following: BIOL 2304, BIOL 2504, or BIOL 2604
- b. at least three linked or inclusive laboratory courses from the approved list (two must be BIOL or crosslisted course)
- c. no more than 9 credits of non-BIOL or non-BIOL crosslisted courses from the approved list

2a. Select at least one of BIOL 2304, BIOL 2504, or BIOL 2604

BIOL 2304 Plant Biology (3) _____
BIOL 2504 Zoology (3) _____
BIOL 2604 General Microbiology (3) _____

2b. Select at least three linked or inclusive laboratory courses from this list (two must be BIOL or crosslisted course)

BIOL 2604 General Microbiology (3) _____ BIOL 4674 Pathogenic Bacteriology (3) _____
+ 2614 General Microbiology Lab (2) _____ + 4724 Pathogenic Bact Lab (2) _____

BIOL	3014	Insect Biology	(2)	_____	BIOL	4704	Immunology	(3)	_____
	+					+			
	3024	Insect Biology Lab	(2)	_____		4714	Immunology Lab	(1)	_____
BIOL	3254	Med and Vet Entomology	(3)	_____	CSES	3114	Soils	(3)	_____
	+					+			
	3264	Med and Vet Ent Lab	(1)	_____		3124	Soils Lab	(1)	_____
BIOL	3774	Molecular Biology	(3)	_____	NEUR	2025	Intro to Neuroscience	(3)	_____
	+					+			
	4774	Molecular Biol Lab	(3)	_____		2035	Neuroscience Lab	(1)	_____
BIOL	4264	Microbial Genetics	(3)	_____	PPWS	4504	Fundamentals Plant Physiology	(3)	_____
	+					+			
	4644	Microbial Gen & Phys Lab	(3)	_____		3514	Plant Physiology Lab	(1)	_____
BIOL	1135	Phage Hunters	(2)	_____	PSYC	4064	Physiological Psychology [#]	(3)	_____
BIOL	1136	Phage Hunters	(2)	_____		+			
BIOL	3104	Cell & Mol Biology Lab	(1)	_____		4264	Laboratory in Phys Psyc	(1)	_____
BIOL	3114	Field & Lab Ecology	(1)	_____	BIOL	4004	Freshwater Ecology	(4)	_____
BIOL	3204	Plant Taxonomy	(3)	_____	BIOL	4164	Environmental Microbiology	(3)	_____
BIOL	3514	Introduction to Histology	(3)	_____	BIOL	4314	Plant Ecology	(4)	_____
BIOL	3454	Introductory Parasitology	(4)	_____	BIOL	4354	Aquatic Entomology	(4)	_____
BIOL	3604	Food Microbiology	(4)	_____	BIOL	4404	Ornithology	(4)	_____
ALS	3304	Physiology of Reproduction	(3)	_____	BIOL	4454	Invertebrate Zoology	(4)	_____
APSC	3304	Embryology	(3)	_____	BIOL	4484	Freshwater Biomonitoring	(4)	_____
FIW	4334	Mammalogy	(4)	_____	BIOL	4824	Bioinformatics Methods	(3)	_____
FIW	4344	Herpetology	(4)	_____					
					FIW	4424	Ichthyology [^]	(4)	_____
					FREC	3314	Forest Ecology and Silvics	(3)	_____
					PPWS	4104	Plant Pathology	(4)	_____

2c. Approved Biological Sciences Electives. A maximum of 9 credits of non-BIOL or non-crosslisted courses may be counted as Biological Sciences elective credit.

BIOL	1135	Phage Hunters	(2)	_____	BIOL	4164	Environmental Microbiology	(3)	_____
BIOL	1136	Phage Hunters	(2)	_____	BIOL	4314	Plant Ecology	(4)	_____
BIOL	2204	Plants and Civilization	(3)	_____	BIOL	4334	Chemical Ecology	(3)	_____
BIOL	2304	Plant Biology	(3)	_____	BIOL	4354	Aquatic Entomology	(4)	_____
BIOL	2404	Biotech in Global Society	(3)	_____	BIOL	4404	Ornithology	(4)	_____
BIOL	2504	Zoology	(3)	_____	BIOL	4454	Invertebrate Zoology	(4)	_____
BIOL	2604	General Microbiology*	(3)	_____	BIOL	4474	Ethology*	(3)	_____
BIOL	2614	General Micro Lab	(2)	_____	BIOL	4484	Freshwater Biomonitoring	(4)	_____
BIOL	3014	Insect Biology	(2)	_____	BIOL	4554	Neurochemical Regulation	(3)	_____
BIOL	3024	Insect Biology Lab	(2)	_____	BIOL	4564	Infectious Disease Ecology	(3)	_____
BIOL	3104	Cell & Mol Biology Lab	(1)	_____	BIOL	4574	Soc Behavior Birds & Mamm	(3)	_____
BIOL	3114	Field & Lab Ecology	(1)	_____	BIOL	4624	Microbial Genetics	(3)	_____
BIOL	3134	Human Genetics	(3)	_____	BIOL	4634	Microbial Physiology	(3)	_____
BIOL	3204	Plant Taxonomy	(3)	_____	BIOL	4644	Microbial Gen & Phys Lab	(3)	_____
BIOL	3254	Med and Vet Entomology	(3)	_____	BIOL	4664	Virology	(3)	_____
BIOL	3264	Med and Vet Ent Lab	(1)	_____	BIOL	4674	Pathogenic Bacteriology	(3)	_____
BIOL	3404	Intro Animal Physiology	(3)	_____	BIOL	4704	Immunology	(3)	_____
BIOL	3514	Introduction to Histology	(3)	_____	BIOL	4714	Immunology Lab	(1)	_____
BIOL	3454	Introductory Parasitology	(4)	_____	BIOL	4724	Pathogenic Bacteriology Lab	(2)	_____
BIOL	3604	Food Microbiology	(4)	_____	BIOL	4734	Inflammation Biology	(3)	_____
BIOL	3774	Molecular Biol	(3)	_____	BIOL	4774	Molecular Biol Lab	(3)	_____

BIOL	3954	Study Abroad (var. credit)	()	_____	BIOL	4804	Prokaryotic Diversity	(3)	_____
BIOL	4004	Freshwater Ecology	(4)	_____	BIOL	4824	Bioinformatics Methods	(3)	_____
BIOL	4014	Environmental Tox	(2)	_____	BIOL	4844	Proteomics Biol Mass Spec	(3)	_____
BIOL	4044	Biogeography	(3)	_____	BIOL	4854	Cytogenetics	(3)	_____
BIOL	4104	Developmental Biology	(3)	_____	BIOL	4874	Cancer Biology	(3)	_____
BIOL	4114	Global Change Ecology	(3)	_____	BIOL	4884	Cell Biology	(3)	_____
BIOL	4134	Evolutionary Genetics	(3)	_____	BIOL	4974	Indep Study (var. credit) ²	()	_____
					BIOL	4994	Undergrad Rsrch (var. credit) ^{2*}	()	_____
ALS	2304	Comp Animal Phys and Anat	(4)	_____	FREC	2324	Dendrology Laboratory	(1)	_____
ALS	3104	Animal Breeding & Genetics	(3)	_____	FREC	3314	Forest Ecology and Silvics	(3)	_____
ALS	3204	Animal Nutrition & Feeding	(3)	_____	FST	4634	Epidem Foodborne Disease	(3)	_____
ALS	3304	Physiology of Reproduction	(3)	_____	NEUR	2025	Intro to Neuroscience	(3)	_____
APSC	3304	Embryology	(3)	_____	NEUR	2026	Intro to Neuroscience	(3)	_____
BCHM	3114	Biochem for Biotech	(3)	_____	NEUR	2035	Neuroscience Lab	(1)	_____
CSSES	3114	Soils	(3)	_____	NEUR	2036	Neuroscience Lab	(1)	_____
CSSES	3124	Soils Laboratory	(1)	_____	PPWS	3504	Plant Phys & Biotic Env	(3)	_____
FIW	2314	Wildlife Biology ^{^#}	(3)	_____	PPWS	3514	Plant Physiology Lab	(1)	_____
FIW	4424	Ichthyology [^]	(4)	_____	PPWS	4104	Plant Pathology	(4)	_____
FIW	4334	Mammalogy	(4)	_____	PPWS	4114	Microbial Forensics / Biosecurity	(3)	_____
FIW	4344	Herpetology	(4)	_____	PPWS	4504	Fundamentals Plant Physiology	(3)	_____
FIW	4614	Fish Ecology	(3)	_____	PSYC	2064	Nerv Systems and Behavior [#]	(3)	_____
FIW	4624	Marine Ecology	(3)	_____	PSYC	4064	Physiological Psychology [#]	(3)	_____
FREC	2314	Forest Biology and Dendrology	(2)	_____	PSYC	4264	Laboratory in Phys Psyc	(1)	_____

3. Additional Science Requirements

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)	_____					

Total Biological Sciences Courses Required

34 Credits

Additional Science Requirements

28 Credits

Total Curriculum for Liberal Education Requirements:

38 Credits

Total Free Electives

20 Credits

Total Credits Required for Graduation

120 Credits

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 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.

[#]Has prerequisite not listed elsewhere on checksheet. FIW 2314 requires FIW 2114, PSYC 2064 requires PSYC 2004, and PSYC 4064 requires PSYC 2004 and 2094.

[^] Course has major restriction: students may ask FIW to be added if seats are available.

All BIOL courses except 1004, 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.

BIOL 4964 may not be used as Biological Sciences elective but will be used to calculate in-major GPA.

BIOL majors who also are enrolled in the Microbiology major or degree may count a maximum of 9 credits from the following courses toward the 22 required BIOL elective credits (section 2c): BIOL 3104, 3774, 3454, 4164, 4604, 4624, 4634, 4644, 4664, 4674, 4704, 4714, 4734, 4804, 4824, 4994, BCHM 3114, PPWS 4114, and FST 4634.

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

Three years of a single foreign language in high school is required to meet the College of Science Foreign Language Requirement or a student must:

- a. Take the equivalent of an 1106 foreign language at an accredited university or community college. (Note: A student who has not completed two (2) units of a single foreign language in high school must earn six (6) semester hours of college level credit in a foreign language (i.e., both 1105 and 1106). These six hours are in addition to the 120 hours required for graduation.
- b. Credit by exam for a foreign language. The credit by exam option is available only to students who have gained knowledge of a foreign language without the benefit of formal training.
- c. Students whose native language is not English may be exempted from the foreign language through demonstrating satisfactory knowledge of the foreign language as prescribed by the Department of Foreign Languages. (No credit will be awarded)

*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 2104: BIOL 2134 Cell Function and Differentiation
BIOL 2604: BIOL 2604H Honors General Microbiology
BIOL 2704: BIOL 2704H Honors Evolutionary Biology
BIOL 2804: BIOL 2804H Honors Ecology
BIOL 4474: PSYC 2704 Animal Behavior
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
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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: Medical and Veterinary Entomology
ENT/BIOL 3264: Medical and Veterinary Entomology Laboratory
FST/BIOL 3604: Food Microbiology
GEOG/BIOL 4044: Biogeography
CSES/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 Behavior Birds & Mamm

Satisfactory Progress Toward Degree
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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 (except 1004 and 1044), 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.
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