Biology - Natural Sciences Emphasis, BS

Program Description

The B.S. Biology Natural Science emphasis is designed for students seeking a career in Organismal or Field Biology. This includes careers with the Bureau of Land Management (BLM), U.S. Forest Services, Fish and Game, National Parks Services, State Parks, Department of Natural Resources (DNR), Association of Zoos and Aquariums (AZA) and Local Governments.

Program Curriculum

120 credits

Utah Tech General Education Requirements

All Utah Tech General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to Utah Tech's minimum General Education standards in American Institutions, English, and Mathematics.

General Education Core Requirements (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)

Code	Title	Hours
English		3-7
Mathematics		3-5
American Institutions		3-6
Life Sciences		3-10
Physical Sciences		3-5
Fine Arts		3
Literature/Humanities		3
Social & Behavioral Sciences		3
Exploration		3-5

Code	Title	Hours
Biology Core Requirements		
BIOL 1610 & BIOL 1615	Principles of Biology I (LS) and Principles of Biology I Lab (LAB)	5
BIOL 1620 & BIOL 1625	Principles of Biology II and Principles of Biology II Lab	5
BIOL 2400 & BIOL 2405	Plant Kingdom (LS, ALPP) and Plant Kingdom Lab (LAB, ALPP)	4
BIOL 3010	Evolution	3
BIOL 3030	Principles of Genetics	4
BIOL 3040 & BIOL 3045	General Ecology and General Ecology Lab	4
BIOL 3110	Scientific Writing	3
or BIOL 3120	Science Communication	
BIOL 4910	Senior Seminar	1
Mathematics & Physical Science Requirements		
CHEM 1210 & CHEM 1215	Principles of Chemistry I (PS) and Principles of Chemistry I Lab (LAB)	5
CHEM 1220 & CHEM 1225	Principles of Chemistry II and Principles of Chemistry II Lab	5
ENVS 1210 & ENVS 1215	Introduction to Environmental Science and Introduction to Environmental Science Laboratory	4

GEO 1110 & GEO 1115	Physical Geology (PS) and Physical Geology Lab (LAB)	4
GEOG 3600 & GEOG 3605	Introduction to Geographic Information Systems and Introduction to Geographic Information Systems Laboratory	4
MATH 1040	Introduction to Statistics (MA)	3-4
or MATH 1050	College Algebra / Pre-Calculus (MA)	
PHYS 1010 & PHYS 1015	Elementary Physics (PS) and Elementary Physics Lab (LAB)	4-5
or PHYS 2010 & PHYS 2015	College Physics I (PS) and College Physics I Lab (LAB)	
Additional Biology Requirements		
Complete three (3) of the following sets of courses:		
BIOL 3200	Invertebrate Zoology	
BIOL 4200 & BIOL 4205	Plant Taxonomy (ALPP) and Plant Taxonomy Lab (ALPP)	
BIOL 4260 & BIOL 4265	Herpetology and Herpetology Lab	
BIOL 4270 & BIOL 4275	Ichthyology and Ichthyology Lab	
BIOL 4280	Marine Biology	
BIOL 4350 & BIOL 4355	Animal Behavior and Animal Behavior Lab	
BIOL 4380 & BIOL 4385	Ornithology and Ornithology Lab	
BIOL 4411 & BIOL 4415	Mammalogy and Mammalogy Lab	
BIOL 4440	General Entomology	
BIOL 4600 & BIOL 4605	Plant Physiology and Plant Physiology Lab	
Elective Courses		
Complete 12 credits from the following or from any upper-division BIOL course listed above not already used to fulfill a requirement.		
BIOL 3100	Bioethics	
BIOL 3140 & BIOL 3145	Comparative Vertebrate Anatomy and Comparative Vertebrate Anatomy Lab	
BIOL 3250	Cancer Biology	
BIOL 3360	Developmental Biology	
BIOL 3450 & BIOL 3455	General Microbiology and General Microbiology Lab	
BIOL 3550 & BIOL 3555	Eukaryotic Cell Biology and Eukaryotic Cell Biology Lab	
BIOL 4300 & BIOL 4305	Molecular Biology and Molecular Biology Laboratory	
BIOL 4500 & BIOL 4505	Comparative Vertebrate Physiology and Comparative Vertebrate Physiology Lab	
BIOL 4810R	Independent Research	
BIOL 4930R	Senior Thesis	
GEOG 4140	Advanced GIS Analysis	
GEOG 4180	Geoprocessing with Python	
MATH 1210	Calculus I (MA)	
MATH 3060 & BIOL 3155	Statistics for Scientists and Scientific Method and Experimental Design	

Graduation Requirements

1. Complete a minimum of 120 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at Utah Tech for institutional residency.
4. Cumulative GPA 2.0 or higher.
5. Grade C- or higher required in each Program Requirement, Core Discipline Requirement, and Biology Elective Requirement course.
6. Maximum 6 total credits of BIOL 4810R, and/or BIOL 4890R, and/or BIOL 4930R may be used toward Biology requirements.

Graduation Plan

1st Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 1610 & BIOL 1615	5	BIOL 1620 & BIOL 1625	5
SSC 1010	2	CHEM 1210 & CHEM 1215	5
MATH 1050	4	ENGL 1010	3
GEO 1110 & GEO 1115	4	Gen-Ed Social/Behavioral Science	
	15		**13**

2nd Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 2400 & BIOL 2405 (meets GE Exploration requirement)	4	PHYS 1010 & PHYS 1015	4
ENGL 2010	3	Biology organismal course #1	3
General Elective	3	ENVS 1210 & ENVS 1215	4
CHEM 1220 & CHEM 1225	5	General Education (Social & Behavioral Sciences) (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3
Gen-Ed Fine Arts		Gen-Ed American Institutions	
		Gen-Ed Lit/Humanities	
	15		**14**

3rd Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 3040 & BIOL 3045	4	BIOL electives	5
GEOG 3600 & GEOG 3605	4	BIOL organismal course #2	4
BIOL 3030	3	Additional Physical Sciences course	3
BIOL organismal course #2	4	General Elective(s)	6
		BIOL 3010	3
		BIOL 3110 or 3120	3
	15		**24**

4th Year

Fall Semester	Hours	Spring Semester	Hours
BIOL electives	6	BIOL upper-division electives	3
BIOL upper division elective	3	BIOL upper-division elective	3
BIOL organismal course #3	4	BIOL 4910	1

BIOL upper-division elective	3 Electives	5
	16	**12**

Total Hours 124

BS Natural Sciences Program Learning Outcomes

At the successful conclusion of this program, students will be able to:

1. Outline the foundational concepts of biology including cellular, organismic, ecological, and evolutionary biology.
2. Evaluate hypotheses, design research, test hypotheses, conduct data analysis, and draw conclusions on biology related problems.
3. Integrate knowledge of scientific literacy in oral and written assignments when communicating biological topics.
4. Evaluate information to discriminate between science and non-science.
5. Develop an understanding of why science is an integral activity for addressing social and environmental problems.