Biology - Biology Education Emphasis, BS

Program Description

The B.S. Biology Secondary Education emphasis is designed for students seeking a career in secondary education. Successful completion of this degree, the secondary education (SET) program and the required PRAXIS exam, allows students to obtain the Biological Sciences Endorsement and certifies the student to teach high school biology courses.

Professional Licensure/Certification (PLC) Requirements

The curriculum for programs at Utah Tech University leading to professional licensure are designed to prepare students for Utah licensure and certification requirements. Admission into programs for professions requiring licensure and certification does not guarantee that students will obtain a license or certificate. Licensure and certification requirements are set by agencies that are not controlled by or affiliated with the University, and licensure and certification requirements can change at any time.

Licensure boards in each state establish requirements for licensure and certification for their respective state. States vary by which professions are required to be licensed and how licensure functions, and such requirements may change at any time. The terms related to licensure and certification, among others, also vary by state as well.

Students and prospective students are strongly encouraged to contact the state licensure entity in the state where they intend to work to review all licensure and certification requirements imposed by the student's state(s) of choice. The University cannot provide verification of a student's ability to meet licensure or certification requirements unrelated to its educational programming. Some states require individuals to complete additional requirements that are unrelated to educational prerequisites. For more information, visit the State Authorization and Professional Licensure (https://academics.utahtech.edu/state-authorization/) web page and select the program, or speak to the director of the program.

Utah Tech University shall not be held liable if a student is unable to qualify for licensure or certification in any jurisdiction.

This disclosure is made pursuant to 34 CFR §668.43(a)(5)(v)(C).

Admission Requirements

1. Completion of the following courses

Code	Title	Hours
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
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
BIOL 3010	Evolution	3
or BIOL 3030	Principles of Genetics	

2. An overall GPA of 2.7 or higher

3. Complete Application (includes Personal Statement)

Incoming freshman and current students who don't meet admission requirements but are interested in pursuing biology will be matriculated as Pre-Biology Majors.

Student may apply for admission when course and GPA requirements are complete or during the semester they will finish said course requirements. Students applying during the semester they are finishing course requirements can receive tentative admission. Full admission will be granted pending the students meets course and GPA requirements at the conclusion of the semester.

Prospective Biology Majors who meet the requirements must schedule an appointment with the biology advisor and bring completed application form. Once the application is verified, the student will be matriculated under the desired B.S Biology Emphasis.

Students who don't meet the application requirements may go through an appeal process. The Biology Department Chair, Biology Advisor and select Biology Faculty will hear all admission appeals.

All upper-division biology courses except BIOL 3010, BIOL 3030, BIOL 3040/45 and BIOL 3000R, will be closed to students except those matriculated in a **B.S Biology Emphasis, Biology Minor, or Integrated Studies with a Biology Emphasis.***

*** Except for Upper-division biology courses used in the Allied Health degrees and B.S Chemistry.**

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

Secondary Education Pre-program Requirements

Code	Title	Hours
HIST 1700	American History (AI)	3
or POLS 1100	American Government (AI)	
FSHD 1500	Human Development Lifespan (SS, GC)	3
or PSY 1010	General Psychology (SS, GC)	
or PSY 1100	Human Development Through Lifespan (SS, GC)	
EDUC 1010	Foundations/Intro to Education	3
EDUC 2010	Intro to Exceptional Learners	3
EDUC 2400	Foundations Multicultural/ESL (SS, GC, ALCI)	3
EDUC 2500	Instructional Technology in K-12 Classrooms (Must be taken within the last 5 years)	3
EDUC 3110		3
EDUC 2700	Graduation Planning, Program Application & Career Prep	0

Biology Core Requirements

Code	Title	Hours
Biology Program 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
MATH 1050	College Algebra / Pre-Calculus (MA)	4
Core Discipline 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 2320 & BIOL 2325	Human Anatomy and Human Anatomy Lab	4-5
or BIOL 3140 & BIOL 3145	Comparative Vertebrate Anatomy and Comparative Vertebrate Anatomy Lab	
BIOL 2420 & BIOL 2425	Human Physiology and Human Physiology Lab	4
or BIOL 4500 & BIOL 4505	Comparative Vertebrate Physiology and Comparative Vertebrate Physiology Lab	
BIOL 3010	Evolution	3
BIOL 3030	Principles of Genetics	4
BIOL 3040 & BIOL 3045	General Ecology and General Ecology Lab	4
Complete one (1) of the following sets of courses:		4
BIOL 2060 & BIOL 2065	Principles of Microbiology and Principles of Microbiology Lab	
BIOL 3450 & BIOL 3455	General Microbiology and General Microbiology Lab	
BIOL 3550 & BIOL 3555	Eukaryotic Cell Biology and Eukaryotic Cell Biology Lab	
Required Biology Elective		
BIOL 2400 & BIOL 2405	Plant Kingdom (LS, ALPP) and Plant Kingdom Lab (LAB, ALPP)	4
Complete one (1) of the following sets of Zoology courses:		4
BIOL 3200 & BIOL 3205	Invertebrate Zoology and Invertebrate Zoology Lab	
BIOL 4260 & BIOL 4265	Herpetology and Herpetology Lab	
BIOL 4270 & BIOL 4275	Ichthyology and Ichthyology Lab	
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	
Lab Safety Certification Requirement		
SCI 2600	Lab Safety for Teachers	1
SCI 4750	Science and Engineering Pedagogical Knowledge	3
SCI 4700	Secondary Science Teaching Methods	3

Secondary Education Program Requirements

To be admitted to the Secondary Education Program and enroll in professional courses:

- USBE R277-504-3 A(3) “requires candidates to maintain a cumulative university GPA of 3.0, and receive a C or better in all education related courses and major required content courses"

and students must pass the appropriate PRAXIS II content area subject test(s). In addition, one of the following must be completed:

- Students with BA/BS degrees in progress must have completed at least 95% of major coursework and have approval of major academic content area department advisor
- Students with completed BA/BS or higher degrees must have their transcripts reviewed by content area department advisor

Secondary Education Program Professional Requirements

Code	Title	Hours
Semester I		
SCI 4700	Secondary Science Teaching Methods	3
SCED 3720	Reading Writing Content Areas (ALPP)	2
SCED 4100	Curriculum and Instruction	3
SCED 4200	Secondary Assessment	2
SCED 4600	Classroom Management (ALPP)	3
SCED 4300	Practicum Seminar	3
Semester II		
SCED 4900	Secondary Student Teaching	10
SCED 4989	Student Teaching Capstone	3

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 university GPA 3.0 or higher.
5. Grade C or higher (not C-) in each Biology Program Requirement, Core Discipline Requirement, and Biology Elective course.
6. USBE R277-504-3 A(3) “requires candidates to maintain a cumulative university GPA of 3.0, and receive a C or better in all education related courses and major required content courses"
7. 3.0 GPA in program prerequisite and professional courses.

Graduation Plan

1st Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 1610 & BIOL 1615	5	BIOL 1620 & BIOL 1625	5
CHEM 1210 & CHEM 1215	5	CHEM 1220 & CHEM 1225	5
ENGL 1010	3	MATH 1050	4
General Elective	1	ENGL 2010	3
	14		**17**

2nd Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 2400 & BIOL 2405	4	BIOL 3040 & BIOL 3045	4
EDUC 1010	3	EDUC 2010	3
BIOL 3010	3	General Education (Fine Arts) (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3
BIOL 3030	4	FSHD 1500, PSY 1010, or PSY 1100	3
		HIST 1700 or POLS 1100	3
	14		**16**

3rd Year

Fall Semester	Hours	Spring Semester	Hours
BIOL 2060 & BIOL 2065	4	EDUC 2500 (Must be taken within the last 5 years)	3
BIOL 2320 & BIOL 2325	5	EDUC 2110	3

EDUC 2400	3	BIOL 2420 & BIOL 2425	4
General Education (Literatures/ Humanities) (catalog.utahtech.edu/programs/generaleducation/#gerequirementstext)	3	BIOL Requirement (Approved Zoology course)	4
		SCI 2600	1
	15		**15**

4th Year

Fall Semester	**Hours**	**Spring Semester**	**Hours**
SCI 4700	3	SCED 4900	10
SCED 3720	2	SCED 4989	3
SCED 4100	3		
SCED 4600	3		
SCED 4200	2		
SCED 4300	3		
	16		**13**

Total Hours 120

[1] Specific courses fulfill SET requirements

BS Biology Education Program Learning Outcomes

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

1. Outline the foundational concepts of biology including cellular, organismal, 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.