

# Biotechnology, B.S.

The Bachelor's Degree in Biotechnology will prepare students to enter the field of research, education, pharmaceuticals, forensics, and a variety of other careers. It is also great preparation for advanced degrees in the sciences.

## Program Requirements

Code	Title	Credit Hours
<b>Total Credit Hours</b>		<b>124</b>
<b>General Education Requirements</b>		<b>39 Credits</b>
ENGL 1010 or ENGL 1005	Introduction to Academic Writing CC Literacies and Composition Across Contexts CC	3
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1050 or MATH 1055	College Algebra QL College Algebra with Preliminaries QL	4
Complete one of the following:		3
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
PHIL 2050	Ethics and Values IH	3
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE Fitness for Life TE	2
Distribution Courses:		
BIOL 1610	College Biology I BB	4
CHEM 1210	Principles of Chemistry I PP	4
CHEM 1220	Principles of Chemistry II PP	4
Humanities Distribution		3
Fine Arts Distribution		3
Social/Behavioral Science		3
<b>Discipline Core Requirements</b>		<b>73 Credits</b>
BIOL 1615	College Biology I Laboratory	1
BIOL 3400	Cell Biology	3
BIOL 3500	Genetics	3
BIOL 3550	Molecular Biology	3
BIOL 3600	Biological Chemistry	3
BIOL 4550	Molecular Evolution and Bioinformatics WE	3
Take one of these courses (2 credit Hours).		2
BTEC 494R	Student Seminar WE (2)	
BIOL 4940	Student Seminar WE (2)	
Choose any 2 from the following <small>Student must complete at least 2 of the courses listed even if it exceeds the required 3 credit hours</small>		3
BIOL 3515	Advanced Genetics Laboratory (1)	
BIOL 3605	Biological Chemistry Lab (1)	
BIOL 3405	Cell Biology Laboratory (1)	
BIOL 3100	Introduction to Data Analysis for Biologists (3)	
BIOL 3555	Experiments in Molecular Biology (1)	
CHEM 3005	Analytical Chemistry Laboratory (2)	
BTEC 3300	Biomolecular Modeling and Simulations (4)	

BOT 4700	Plant Tissue Culture WE (4)	
ZOOL 4300	Histology (4)	
Choose any from the following:		8
BTEC 481R	Biotechnology Internship (1-10)	
BIOL 489R	Student Research (1-4)	
BTEC 489R	Student Research (1-4)	
BTEC 499R	Senior Thesis (1-2)	
Choose from 1 MICR course and accompanying lab from the following:		4
MICR 3450	General Microbiology (3) (**Recommended**)	
MICR 3455	General Microbiology Laboratory (1)	
MICR 2060	Microbiology for Health Professions BB (3)	
MICR 2065	Microbiology for Health Professions Laboratory (1)	
STAT 2040	Principles of Statistics QL	4
PHYS 2010	College Physics I PP	4
PHYS 2015	College Physics I Lab	1
PHYS 2020	College Physics II PP	4
PHYS 2025	College Physics II Lab	1
CHEM 1215	Principles of Chemistry I Laboratory	1
CHEM 1225	Principles of Chemistry II Laboratory	1
CHEM 2310	Organic Chemistry I	4
CHEM 2315	Organic Chemistry I Laboratory	1
CHEM 2320	Organic Chemistry II	4
CHEM 2325	Organic Chemistry II Laboratory	1
BTEC 1010	Fundamentals of Biotechnology I Career Survey BB	3
BTEC 2010	DNA Manipulation and Analysis	3
BTEC 2020	Protein Purification and Analysis	3
BTEC 2030	Cell Culture Techniques	2
BTEC 2040	Advanced Nucleic Acid Laboratory	3
<b>Elective Requirements</b>		<b>12</b>
		<b>Credits</b>
Additional credits to meet credit and upper-division requirements.		12

## Graduation Requirements

1. Complete the required minimum 124 credit hours.
2. At least 30 credit hours in residence at UVU or satellite sites are required, with 10 hours earned during the last 45 hours.
3. A minimum of 40 credits must be upper-division (numbered 3000 or above)
4. Complete core courses with a grade of "C" or higher in each BTEC course and a "C-" or higher in all other core courses.
5. Achieve a minimum overall GPA of 2.0 with a minimum GPA of 2.25 in core courses.
6. Successful completion of at least one Global/Intercultural course.
7. Successful completion of two writing enriched (WE) courses.

## Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (<http://www.uvu.edu/wolverinetrack/>).

### First Year

Semester 1		Credit Hours
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC or Literacies and Composition Across Contexts CC	3
MATH 1050 or MATH 1055	College Algebra QL or College Algebra with Preliminaries QL	4
HLTH 1100 or EXSC 1097	Personal Health and Wellness TE or Fitness for Life TE	2
BIOL 1610	College Biology I BB	4

BIOL 1615	College Biology I Laboratory	1
BTEC 1010	Fundamentals of Biotechnology I Career Survey BB	3
<b>Credit Hours</b>		<b>17</b>
<b>Semester 2</b>		
ENGL 2010	Intermediate Academic Writing CC	3
PHIL 205G	Ethics and Values IH GI	3
STAT 2040	Principles of Statistics QL	4
BTEC 2010	DNA Manipulation and Analysis	3
MICR course		3
MICR lab		1
<b>Credit Hours</b>		<b>17</b>
<b>Second Year</b>		
<b>Semester 3</b>		
CHEM 1210	Principles of Chemistry I PP	4
CHEM 1215	Principles of Chemistry I Laboratory	1
PHYS 2010	College Physics I PP	4
PHYS 2015	College Physics I Lab	1
BIOL 3500	Genetics	3
BIOL/CHEM/BTEC/BOT/ZOOL course		1
<b>Credit Hours</b>		<b>14</b>
<b>Semester 4</b>		
American Institutions Distribution		3
CHEM 1220	Principles of Chemistry II PP	4
CHEM 1225	Principles of Chemistry II Laboratory	1
PHYS 2020	College Physics II PP	4
PHYS 2025	College Physics II Lab	1
BTEC 2020	Protein Purification and Analysis	3
<b>Credit Hours</b>		<b>16</b>
<b>Third Year</b>		
<b>Semester 5</b>		
Humanities Distribution		3
CHEM 2310	Organic Chemistry I	4
CHEM 2315	Organic Chemistry I Laboratory	1
BIOL 3400	Cell Biology	3
BTEC 2030	Cell Culture Techniques	2
Elective		3
<b>Credit Hours</b>		<b>16</b>
<b>Semester 6</b>		
Fine Arts Distribution		3
Social/Behavioral Science Distribution		3
CHEM 2320	Organic Chemistry II	4
CHEM 2325	Organic Chemistry II Laboratory	1
Elective		3
<b>Credit Hours</b>		<b>14</b>
<b>Fourth Year</b>		
<b>Semester 7</b>		
BIOL 3550	Molecular Biology	3
BTEC 2040	Advanced Nucleic Acid Laboratory	3
BTEC or BIOL Internship or Research course		8
Elective		3
<b>Credit Hours</b>		<b>17</b>
<b>Semester 8</b>		
BIOL 3600	Biological Chemistry	3
BIOL 4550	Molecular Evolution and Bioinformatics WE	3
BTEC 494R	Student Seminar WE	2
BIOL/CHEM/BTEC/BOT/ZOOL course		2
Elective		3
<b>Credit Hours</b>		<b>13</b>
<b>Total Credit Hours</b>		<b>124</b>

## **Program Learning Outcomes**

1. Apply the process of science through the use of hypothesis testing in the design and completion of scientific experiments
2. Critically evaluate scientific information
3. Quantitatively analyze scientific data through graph interpretation, statistical analysis, and problem solving
4. Effectively communicate scientific information in both written and oral formats.
5. Explain fundamental biological concepts including molecular biology, biochemistry, cell biology, genetics, and evolution.