

# COLLEGE OF ARTS AND SCIENCES

## BIOLOGY

### Faculty

- Bonnie K. Baxter
- Christy Clay
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- David Kimberly (Co-Chair)
- David Parrott (Co-Chair)

The Biology program features integrated lab/lecture blocks that emphasize active project-based learning models, allowing our majors to engage in scientific investigations from the molecular level to entire ecosystems. While our core classes focus on disciplinary content and the skill sets of experimentation, the upper division course work allows students to engage in research methodology and concentrate on an area of interest. Our curriculum is enriched by significant laboratory and the field work. We strongly encourage interdisciplinary work and allow electives to be taken in other science and math departments. What's more, students receive credit for undergraduate research, internships, and teaching assistantships. Faculty take advantage of Westminster's unique location between the Wasatch Mountains and Great Salt Lake to leverage the natural world into an extension of our laboratories.

Students have the opportunity to engage with faculty mentors who are active scholars and are excited about teaching and learning science. Graduates of our program are skilled at critically assessing scientific problems, collecting and analyzing data, and communicating about their work. Our students are prepared for work or do graduate study in a variety fields such as biotechnology, medicine, public health, ecology, environmental science, law, education, science journalism, government, business, and policy. Our mission is to prepare students for a future in science and to create a lifelong enthusiasm for biology.

### Program Goals

Through an innovative and research-rich curriculum, the biology program endeavors to create majors and minors that will be able to:

1. Articulate biological principles
2. Design and conduct experiments
3. Prepare effective written products or presentations
4. Collaborate successfully in teams
5. Utilize scientific literature, resources, and databases
6. Develop values that support inclusion in biology

### Objectives

The Biology program offers a Bachelor of Science degree with a breadth of coursework and a focus on laboratory learning ranging from molecular to organismal topics. Undergraduate research is prominent in our program and is offered to students to learn first-hand the process of science. Presentation of research results at national meetings is encouraged. Students receive degree credit for research and internships. Recent biology graduates have been accepted to professional and graduate schools (at a rate of 50–100% each year), worked as laboratory researchers, educators, and biotechnologists.

### Program Requirements

The program is designed to allow lateral shifting to other science majors if the student so desires. Students must maintain a minimum 2.3 GPA in biology courses required for the biology major. No more than half of the biology courses required for a major or minor are accepted by transfer. Please note that 300- and 400-level courses are designed for juniors and seniors.

Students choosing a double major or minor within the science program may not apply electives to more than one major or minor. Only classes listed under "required" courses that coincide with both majors/minors may be applied to both.

Students must meet the university-wide graduation requirements in addition to the Biology major:

- 124 total hours
- 30 upper division hours
- WCore or Honors College requirements

### Biology Major

Requirement Description	Credit Hours	Prerequisites
<b>I. World Language Requirement</b>	<b>8</b>	
Biology majors must complete <b>eight</b> credit hours in a single world language.		
<b>II. Lower Division Core Courses</b>	<b>16</b>	
BIOL 202 Organisms and Evolution	4	
BIOL 203 Introduction to Ecology	4	pre- or co-requisite: DATA 220
BIOL 204 Principles of Genetics	4	CHEM 112

Requirement Description	Credit Hours	Prerequisites
BIOL 205 Introduction to Cell Biology	4	CHEM 112
<b>III. Upper Division Courses</b>	<b>4</b>	
BIOL 420 or WCSAM 400 Senior Seminar or Science Capstone	2	pre- or co-requisite: BIOL 204 or BIOL 205
BIOL 311 Scientific Writing	2	
<b>IV. Elective</b>	<b>18</b>	
Take eighteen hours of BIOL upper division electives or other science upper division electives (from CHEM, DATA, ENVI, GEOL, NEURO, PHYS, or PUBH) with advisor approval. A limit of two hours for BIOL 387 and a limit of four hours each of BIOL 300, BIOL 430, and BIOL 440 is permitted for this elective category.		
<b>V. Required Courses from Other Programs</b>	<b>32</b>	
CHEM 111 Principles of Chemistry I and Lab	4	co-requisites: CHEM 111R recommended/ MATH 144 required
CHEM 112 Principles of Chemistry II and Lab	4	CHEM 111
CHEM 303 Organic Chemistry I and Lab	4	CHEM 112
CHEM 304 OR CHEM 350 Organic Chemistry II and Lab OR Biochemistry and Lab	4	BIOL 205 and CHEM 303
DATA 220 Introduction to Statistics	4	
Take one of the following courses:		
DATA 350 Statistical Modeling	4	DATA 220
MATH 201 Calculus I	4	MATH 144 or or placement test
Students must take one first-level (I) and one second-level (II) Physics course:		
PHYS 151 or PHYS 211 Principles of Physics I and Lab or Physics for Scientists and Engineers I and Lab	4	MATH 144 MATH 144 co-requisites: MATH 201
PHYS 152 or PHYS 212 Principles of Physics II and Lab or Physics for Scientists and Engineers II and Lab	4	PHYS 151 or PHYS 211 PHYS 211 co-requisites: MATH 202
<b>Total Hours for the Biology Major</b>	<b>78</b>	

**Recommended Plan of Study for Biology**

	Fall Semester
Year 1	BIOL 202 BIOL 203 CHEM 111/112 DATA 220 (and prerequisites if necessary) WCore Courses
Year 2	BIOL 204 BIOL 205 BIOL 311 DATA 350 Statistical Modeling or MATH 201 Calculus I (if not taken in the previous year) *CHEM 303/304 BIOL Biology elective WCore Courses
Year 3	BIOL Biology Electives (8-12) *PHYS 151/152 or PHYS 211/212 WCore Courses
Year 4	BIOL 420 or WCSAM 400 BIOL Biology electives

\*Alternatively, a student could take the PHYS 151/152 (or 211/212) sequence his or her sophomore year and the CHEM 303/304 sequence his or her junior year.

**Biology Minor**

Requirement Description	Credit Hours	Prerequisites
<b>I. Required Courses</b>	<b>16</b>	
BIOL 202 Organisms and Evolution	4	pre- or co-requisite: DATA 220  consent of instructor
BIOL 203 Introduction to Ecology	4	
BIOL 204 Principles of Genetics	4	
BIOL 205 Introduction to Cell Biology	4	
<b>II. Electives</b>	<b>8</b>	
BIOL coursework numbered at the 200-, 300- or 400-level		
<b>Total Hours for the Biology Minor</b>	<b>24</b>	