

## PROGRAM OVERVIEW

Biology is the study of life, and integrative biology emphasizes the study and understanding of living organisms at different levels of organization—from cell and molecular to the biosphere. We teach biology students core information that serves as a foundation for advanced study and professional training. This basic knowledge includes concepts central to our understanding of molecular biology, as well as the relationship between structure and function, and the genetic mechanisms of inheritance. In addition, biology students are educated in cell biology and genetics, as well as the technological breakthroughs that have led to discoveries in these fields. They learn how organisms adapt to diverse environments and about energy flow and nutrient cycles through ecosystems, worldwide biodiversity and how ecological function can be altered by human impacts.

Through the study of biology, students are introduced to the cornerstones of the discipline within an evolutionary context, thereby leading to an appreciation for the diversity of life on earth and the processes supporting it. Our majors are instilled with a respect, concern, and sense of responsibility for life and the environment, as well as the knowledge to understand and evaluate biological advances that are transforming society. Our curriculum is designed to offer, through core and ancillary courses, a firm foundation in those areas that provide an important background for understanding life processes. Choosing from among a variety of biology electives accommodates individual interests.

## ACADEMIC ADVISING

The College of Liberal Arts and Sciences (CLAS) supports students to graduation using a shared advising system. CLAS students have two academic advisors with whom they should meet regularly to discuss academic and degree progress: a CLAS Academic Advisor and a major/faculty advisor.

*For questions related to CU Denver Core Curriculum, CLAS, general graduation requirements, university/college academic policies, or campus resources contact:*

### CLAS Academic Advising

[clas\\_advising@ucdenver.edu](mailto:clas_advising@ucdenver.edu)

Find your CLAS Advisor [here](#)

North Classroom (NC) Building 1030

303-315-7100

*For questions related to major requirements, major course prerequisites, or evaluation of transfer coursework in your major contact:*

### Kim Regier or Cheri Jones

[kimberly.regier@ucdenver.edu](mailto:kimberly.regier@ucdenver.edu) or [cheri.jones@ucdenver.edu](mailto:cheri.jones@ucdenver.edu)

Visit the department website [here](#)

Science Building Room 2071

303-315-7600

## GENERAL GRADUATION REQUIREMENTS & POLICIES

*All CU Denver CLAS students are required to complete the following minimum general graduation requirements to be eligible to apply for graduation:*

1. Complete a minimum of 120 semester hours
2. Achieve a minimum 2.0 CU cumulative grade point average (GPA)
3. Complete a minimum of 45 upper-division (3000- to 4000-level) semester hours
4. Complete all CU Denver Core, CLAS, and major requirements
5. Complete a minimum of 30 CLAS hours at CU Denver

*The following are **maximum** semester hours that can apply toward the minimum 120 hours required for graduation:*

- 56 semester hours in major department/prefix courses
- 16 semester hours Pass/Fail
- 12 semester hours of Independent Study/Directed Research
- 12 semester hours of internship credit
- 8 semester hours of physical education credit

## PROGRAM REQUIREMENTS & POLICIES

**Students are responsible for meeting with the major/faculty advisor in the department to confirm major requirements.** In addition to completing all CU Denver Core and CLAS requirements, students completing the Biology B.S. Degree are required to complete the following minimum program requirements:

1. Students must complete a total of 67-69 credit hours, including a minimum of 36 BIOL credit hours and 31-33 credit hours in ancillary (supporting math and sciences) coursework.
2. Students must complete a minimum of 18 upper division (3000- level and above) BIOL credit hours.
3. Students must earn a minimum grade of C- (1.7) in all major courses taken at CU Denver and must achieve a minimum cumulative major GPA of 2.0. All graded attempts in required and elective courses are calculated in the major GPA. Students cannot complete major or ancillary course requirements as pass/fail.
4. Students must complete a minimum of 18 upper division (3000-level and above) BIOL credit hours with CU Denver faculty and at least 3 credits must be at 4000-level.
5. All upper division biology courses applied to the undergraduate biology major must be completed within 10 years of graduation.
6. Biology majors are advised to complete either ENGL 3154 - Technical Writing or ENGL 4175 - Writing in the Sciences to fulfill the CLAS Communicative Skills requirement.
7. Intro Experimental Physics labs I and II (PHYS 2321 and PHYS 2341) are specifically designed for students in non-Physics majors and can be paired with either College Physics (PHYS 2010 and PHYS 2020) or General Physics (PHYS 2311 and PHYS 2331) lectures. Students pursuing a second major in Physics should complete General Physics lectures (PHYS 2311 and PHYS 2331) and Applied Physics Labs (PHYS 2351 and PHYS 2361).

## LYNX CONNECT RESOURCES

Are you interested in learning about internship, study abroad, career, and research opportunities for this major? Visit the CU Denver Lynx Connect, located in Tivoli Student Union (TV) Suite 339, and browse the Lynx Connect [website](#) for more information.

Degree Requirements	Credits	Notes
<b>* Course prerequisites change regularly. Students are responsible for consulting advisors and the class schedule in the student portal for prerequisite information. *</b>		
<b>CU Denver Core Curriculum Requirements</b>	<b>34 - 40</b>	<a href="#">CU Denver Core Curriculum Requirements</a>
<b>CLAS Graduation Requirements</b>	<b>15 - 29</b>	<a href="#">CLAS Graduation Requirements</a>
<b>BIOL Major Requirements</b>	<b>67 - 69</b>	
<b>BIOL Required Courses</b>		
BIOL 2051 & 2071 General Biology I with lab <b>or</b> BIOL 2095 & 2096 Honors General Biology I with lab	4	*Prerequisite: High School chemistry or CHEM 1000 recommended Courses can fulfill CU Denver Core Natural/Physical Science with lab
BIOL 2061 & 2081 General Biology II with lab <b>or</b> BIOL 2097 & 2098 Honors General Biology II with lab	4	*Prerequisite: C- or higher in General or Honors BIOL I with lab Courses can fulfill CU Denver Core Natural/Physical Science with lab
BIOL 3411 Principles of Ecology	3	*Prerequisite: C- or higher in General or Honors BIOL I & II with labs
BIOL 3445 Introduction to Evolution	3	*Prerequisite: C- or higher in General or Honors BIOL I & II with labs
BIOL 3611 General Cell Biology	3	*Prerequisite: C- or higher in General or Honors BIOL I & II with labs and General or Honors CHEM I & II with labs
BIOL 3832 General Genetics	3	*Prerequisite: C- or higher in General or Honors BIOL I & II with labs
<b>BIOL Major Electives</b> Complete an additional 16 semester hours of upper-division biology including: One upper-division biology lab course (BIOL 3020 will not satisfy this requirement) <b>and</b> One 3 credit-hour 4000-level lecture course taken in residence from CU Denver Biology faculty	16	*Check individual courses for prerequisites. *CHEM 3810 or 4820 may be counted as BIOL elective hours. *A max of six hours of Independent Study (BIOL3840/4840) or Directed Research (BIOL4880) or Internship (BIOL3939) be may counted toward upper-division biology elective. <b>Internship or Directed Research is highly recommended.</b> *BIOL 4125, 4840, 4880, and 4990 will not count as the 4000-Level elective but can apply as biology electives.
<b>Ancillary (Supporting Math and Science) Courses:</b>		
CHEM 2031 & 2038 General Chemistry I with lab <b>or</b> CHEM 2081 & 2088 Honors General Chemistry I with lab	4 - 5	*Prerequisite: MATH1110 and High School chemistry or CHEM 1000 recommended
CHEM 2061 & 2068 General Chemistry II with lab <b>or</b> CHEM 2091 & 2098 Honors General Chemistry II with lab	5	*Prerequisite: C- or higher in General or Honors CHEM I with lab
CHEM 3411 Organic Chemistry I <b>or</b> CHEM 3481 Honors Organic Chemistry I	4	*Prerequisite: C- or higher in General or Honors CHEM I & II with labs
PHYS 2311 & 2321 General Physics I & Intro to Experimental Phys Lab I <i>and</i> PHYS 2331 & 2341 General Physics II & Intro Experimental Phys Lab II <b>or</b> PHYS 2010 & 2321 College Physics I & Intro to Experimental Phys Lab I <i>and</i> PHYS 2020 & 2341 College Physics II & Intro to Experimental Phys Lab II	10	*Prerequisite: MATH 1401 for PHYS 2311 *Prerequisite: C- or higher in PHYS 2311 and MATH 2411 (for 2331) *Prerequisite: C- or higher in PHYS 2010 or 2311 (for 2020) *Prerequisite: C- or higher in PHYS 2030, 2321, or 2351 with (for 2341)
Complete one of the following options: 1) MATH 1401 Calculus I 2) BIOL 3763 Biostatistics <b>or</b> MATH 4830 Applied Statistics <b>and</b> MATH 1108 and MATH 1109 Stretch College Algebra <b>or</b> MATH 1080 Calculus for Social Sciences and Business <b>or</b> MATH 1110 College Algebra <b>or</b> MATH 1120 College Trigonometry <b>or</b> MATH 1130 Precalculus	4 - 10	*Check individual courses for prerequisites.
<b>Estimated General Electives</b>	<b>0 - 4</b>	General Elective credits vary based on Core & CLAS Requirements. Consult with CLAS Advisor.
<b>Total Minimum Program Hours:</b>	<b>120</b>	45 semester hours must be upper-division

The following academic plan is a *sample* pathway to completing degree requirements for this major. Students should tailor this plan based on previously completed college coursework (e.g., AP, IB, CLEP, dual/concurrent enrollment, and transfer credit), course availability, and individual preferences related to course load, schedules, or add-on programs such as minors or double-majors.

<b>Year One</b>	<b>Fall</b>	CRS	<b>Spring</b>	CRS	
	ENGL1020 – Core Composition I	3		ENGL2030 – Core Composition II	3
	MATH 1130 <sup>C</sup>	4		MATH 1401 <sup>PE</sup> , 4830 <sup>PE</sup> or BIOL 3763 <sup>PE</sup>	3-4
	BIOL 2051 & 2071 <sup>PR C</sup> or 2095 & 2096 <sup>PR</sup>	4		BIOL 2061 & 2081 <sup>PE C</sup> or 2097 & 2098 <sup>PE</sup>	4
	CHEM 2031 & 2038 <sup>PR C</sup> or 2081 & 2088	4		CHEM 2061 & 2068 <sup>PE C</sup> or 2091 & 2098 <sup>PE</sup>	5
	UNIV 1110 College Success	1			
<b>Total Credit Hours</b>	<b>16</b>		<b>Total Credit Hours</b>	<b>15-16</b>	
<b>Year Two</b>	<b>Fall</b>	CRS	<b>Spring</b>	CRS	
	CLAS Communicative Skills – ENGL 3154 or 4175 <i>recommended</i>	3		BIOL 3411 <sup>PE</sup>	3
	BIOL 3611 <sup>PE</sup>	3		BIOL 3445 <sup>PE</sup>	3
	CHEM 3411 <sup>PE</sup> or 3481 <sup>PE</sup>	4		BIOL 3832 <sup>PE</sup>	3
	CLAS Foreign Language Semester I	5		CLAS Foreign Language Semester II	5
<b>Total Credit Hours</b>	<b>15</b>	<b>Total Credit Hours</b>	<b>14</b>		
<b>Year Three</b>	<b>Fall</b>	CRS	<b>Spring</b>	CRS	
	PHYS 2010 & 2321 <sup>C</sup> or 2311 & 2321 <sup>PR C</sup>	5		PHYS 2020 & 2341 <sup>C</sup> or 2331 & 2341 <sup>PE</sup>	5
	BIOL Upper-Division Course with lab <sup>PE PR</sup>	4		BIOL Upper-Division Course <sup>PE</sup> (Consider Internship/Directed Research)	3
	CU Denver Core Behavioral Science	3		CLAS Humanities – PHIL 2441 <i>recommended</i>	3
	CLAS Social Science, Upper-Division	3		CU Denver Core Social Science	3
<b>Total Credit Hours</b>	<b>15</b>	<b>Total Credit Hours</b>	<b>14</b>		
<b>Year Four</b>	<b>Fall</b>	CRS	<b>Spring</b>	CRS	
	BIOL Upper-Division Course <sup>PE</sup>	3		BIOL 4000-Level Course <sup>PE</sup>	3
	BIOL Upper-Division Course <sup>PE</sup>	3		CU Denver Core International Perspectives	3
	CU Denver Core Humanities	3		CU Denver Core Cultural Diversity	3
	CLAS Behavioral Science	3		CU Denver Core Arts	3
	Upper-Division General Electives	5		Upper-Division General Elective	3
<b>Total Credit Hours</b>	<b>16</b>	<b>Total Credit Hours</b>	<b>15</b>		

<sup>M</sup> Major Course Available    <sup>C</sup> CU Denver Core Course    <sup>PE</sup> Prerequisite Enforced    <sup>PR</sup> Prerequisite Recommended

The following academic plan is a *sample* pathway to completing degree requirements for this major. Students should tailor this plan based on previously completed college coursework (e.g., AP, IB, CLEP, dual/concurrent enrollment, and transfer credit), course availability, and individual preferences related to course load, schedules, or add-on programs such as minors or double-majors.

Students who choose this plan must realize they may take longer to graduate and may not be able to apply to professional health career programs until after their fourth, instead of their third, year.

<b>Year One</b>	<b>Fall</b>	CRS
	ENGL1020 – Core Composition I	3
	MATH 1110 <sup>C</sup>	4
	CU Denver Core Humanities / First-Year Seminar	3
	CHEM 1000	3
	CU Denver Core Social Science	3
	<b>Total Credit Hours</b>	<b>16</b>

<b>Spring</b>	CRS
ENGL2030 – Core Composition II	3
MATH 1120 <sup>C</sup>	3
BIOL 2051 & 2071 <sup>PR C</sup> or 2095 & 2096 <sup>PE</sup>	4
CHEM 2031 & 2038 <sup>PR C</sup> or 2081 & 2088 <sup>PE</sup>	4
<b>Total Credit Hours</b>	<b>14</b>

<b>Year Two</b>	<b>Fall</b>	CRS
	BIOL 2061 & 2081 <sup>PE C</sup> or 2097 & 2098 <sup>PE</sup>	4
	CHEM 2061 & 2068 <sup>PE C</sup> or 2091 & 2098 <sup>PE</sup>	5
	MATH 1401 <sup>PE</sup> , 4830 <sup>PE</sup> or BIOL 3763 <sup>PE</sup>	3-4
	CLAS Communicative Skills – ENGL 3154 or 4175 <i>recommended</i>	3
	<b>Total Credit Hours</b>	<b>15-16</b>

<b>Spring</b>	CRS
BIOL 3611 <sup>PE</sup>	3
CHEM 3411 <sup>PE</sup> or 3481 <sup>PE</sup>	4
CLAS Humanities – PHIL 2441 <i>recommended</i>	3
CLAS Social Science, Upper-Division	3
Upper-Division General Elective	3
<b>Total Credit Hours</b>	<b>16</b>

<b>Year Three</b>	<b>Fall</b>	CRS
	BIOL 3411 <sup>PE</sup>	3
	BIOL 3445 <sup>PE</sup>	3
	PHYS 2010 & 2321 <sup>C</sup> or 2311 & 2321 <sup>PR C</sup>	5
	CLAS Foreign Language Semester I	5
<b>Total Credit Hours</b>	<b>16</b>	

<b>Spring</b>	CRS
BIOL 3832 <sup>PE</sup>	3
PHYS 2020 & 2341 <sup>C</sup> or 2331 & 2341 <sup>PE</sup>	5
CLAS Foreign Language Semester II	5
<b>Total Credit Hours</b>	<b>13</b>

<b>Year Four</b>	<b>Fall</b>	CRS
	BIOL Upper-Division Course with lab <sup>PE PR</sup>	4
	BIOL Upper-Division Course <sup>PE</sup> (Consider Internship/Directed Research)	3
	BIOL Upper-Division Course <sup>PE</sup>	3
	CLAS Behavioral Science, Upper-Division	3
	CU Denver Core Cultural Diversity	3
<b>Total Credit Hours</b>	<b>15</b>	

<b>Spring</b>	CRS
BIOL 4000-Level Course <sup>PE</sup>	3
BIOL Upper-Division Course <sup>PE</sup>	3
CU Denver Core Arts	3
CU Denver Core International Perspectives, Upper-Division	3
CU Denver Core Behavioral Science	3
<b>Total Credit Hours</b>	<b>15</b>

<sup>M</sup> Major Course Available    <sup>C</sup> CU Denver Core Course    <sup>PE</sup> Prerequisite Enforced    <sup>PR</sup> Prerequisite Recommended