BIOLOGY - ORGANISMS AND ECOSYSTEMS TRACK, BS

Introduction

The Organisms to Ecosystems Track caters to students interested in pursuing careers in conservation biology, wildlife biology, ecology, evolution and organismal biology. Students in this track may pursue careers at state and federal land agencies (NPS, USFS, BLM, etc.), natural history museums and botanical gardens, zoos and aquariums, the veterinary field, organismal and ecology research, environmental education, environmental consulting, nonprofit advocacy and law, and graduate programs. Consider pairing this major with the Geographic Information Science Certificate.

Program Delivery

- This is an on-campus program.

Declaring This Major

- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#policiestext) to go to information about declaring a major.

General Requirements

To earn a degree, students must satisfy all requirements in each of the three areas below, in addition to their individual major requirements.

- CU Denver General Graduation Requirements (http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation/)
- CU Denver Core Curriculum (http://catalog.ucdenver.edu/cu-denver/undergraduate/graduation-undergraduate-core-requirements/)
- College of Liberal Arts & Sciences Graduation Requirements (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/#graduationrequirementstext)
- Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/academic-policies-procedures/) for information about Academic Policies

Program Requirements

1. Students must complete a minimum of 36 BIOL credit hours.
2. Students must complete a minimum of 15 credit hours in ancillary coursework.
3. Students must complete a minimum of 18 upper division (3000- level and above) BIOL credit hours.
4. Students must earn a minimum grade of C- (1.7) in all courses that apply to the major and must achieve a minimum cumulative major GPA of 2.0. Courses taken using P+/P/F or S/U grading cannot apply to major requirements.
5. Students must complete a minimum of 18 upper division (3000-level and above) BIOL credit hours with CU Denver faculty and at least 6 credits must be at 4000-level or higher.

Program Restrictions, Allowances and Recommendations

1. Upper division BIOL courses more than ten years old will not count automatically to the Major, but can be evaluated individually for their current relevance to the degree program through a petition process with the Department of Integrative Biology Curriculum Committee. Approval for courses older than ten years is not guaranteed so students may be required to update their knowledge by taking additional courses when past courses are outdated.
2. Undergraduate students may count up to six credit hours of independent study or internship (any combination of BIOL 3840 Independent Study, BIOL 3939 Internship, BIOL 4840 Independent Study, BIOL 4880 Directed Research) toward the upper-division Biology electives requirement in the major.

Code	Title	Hours
Complete the following required biology courses:		
BIOL 2010	Organisms to Ecosystems (Gen Bio)	3
or BIOL 2030	Honors Organisms to Ecosystems (Gen Bio)	
BIOL 2011	Organisms to Ecosystems Lab (Gen Bio)	1
or BIOL 2031	Honors Organisms to Ecosystems Lab (Gen Bio)	
BIOL 2020	Molecules to Cells (Gen Bio)	3
or BIOL 2040	Honors Molecules to Cells (Gen Bio)	
BIOL 2021	Molecules to Cells Lab (Gen Bio)	1
or BIOL 2041	Honors Molecules to Cells Lab (Gen Bio)	
BIOL 3350	Diversity of Life	3
BIOL 3411	Principles of Ecology	3
BIOL 3445	Introduction to Evolution	3
BIOL 3832	General Genetics	3
or BIOL 3124	Introduction to Molecular Biology	
Choose at least two lab classes from the following list, or one lab class and one experiential class (minimum two credit hours):		
BIOL 3413	Ecology Laboratory	
BIOL 3640	Mammalogy	
BIOL 3651	General Microbiology Lab	
BIOL 4125	Molecular Biology Laboratory	
BIOL 4335	Plant Structure and Development	
BIOL 4345	Flora of Colorado	
BIOL 4910	Field Studies	
GEOG 4060	Remote Sensing I: Introduction to Environmental Remote Sensing	
GEOG 4080	Introduction to GIS	
GEOG 4731	Mountain Biogeography	
GEOG 4750	Beeography: Geography of Bees	
Experiential classes (Consider taking a class at the CU Boulder Mountain Research Station and transferring it (speak with your advisor):		
BIOL 3840	Independent Study (Must have an organismal/ecosystem component)	
BIOL 3939	Internship (Must have an organismal/ecosystem component)	
BIOL 4880	Directed Research (Must have an organismal/ecosystem component)	
Complete the following required ancillary classes:		

CHEM 2031	General Chemistry I	3
or CHEM 2081	Honors General Chemistry I	
CHEM 2038	General Chemistry Laboratory I	1
or CHEM 2039	Majors General Chemistry I Laboratory	
or CHEM 2088	Honors General Chemistry I Laboratory	
CHEM 2061	General Chemistry II	3
or CHEM 2091	Honors General Chemistry II Lecture	
CHEM 2068	General Chemistry Laboratory II	2
or CHEM 2069	Majors General Chemistry II Laboratory	
or CHEM 2098	Honors General Chemistry II Laboratory	
Choose one quantitative class from this list (certain biology careers may require more math, speak with your advisor):		**3-4**
BIOL 3763	Biostatistics	
MATH 1401	Calculus I	
MATH 4830	Applied Statistics	
Choose one writing intensive class from this list:		**3**
COMM 4550	Rhetorics of Medicine & Health	
ENGL 3154	Technical Writing (also satisfies CLAS Communicative Skills requirement)	
ENGL 4175	Writing in the Sciences (also satisfies CLAS Communicative Skills requirement)	
ENGL 4180	Argumentation and Logic (also satisfies CLAS Humanities requirement)	
ENGL 4280	Proposal and Grant Writing (also satisfies CLAS Humanities requirement)	
Choose at least two upper division BIOL 4000 level classes from this list, that have not already been taken above, must be from UCD faculty:		**6**
BIOL 4024	Introduction to Biotechnology	
BIOL 4052	Advanced Ecology	
BIOL 4053	Infectious Disease Ecology	
BIOL 4055	Virology	
BIOL 4125	Molecular Biology Laboratory	
BIOL 4126	Molecular Genetics	
BIOL 4128	Topics in Molecular Biology	
BIOL 4154	Conservation Biology	
BIOL 4225	Genomics and Bioinformatics	
BIOL 4250	Mechanisms of Animal Behavior	
BIOL 4335	Plant Structure and Development	
BIOL 4345	Flora of Colorado	
BIOL 4415	Applied Microbial Ecology	
BIOL 4425	Biogeography	
BIOL 4460	Environmental Toxicology	
BIOL 4494	Population and Evolutionary Genetics	
BIOL 4780	Aquatic Ecology	
Choose at least two classes from the following list that have not already been taken above (be sure to reach 36 credits in BIOL):		
BIOL 3010	Biology Career and Professional Development Seminar	
BIOL 3104	Behavioral Genetics	
BIOL 3124	Introduction to Molecular Biology	
BIOL 3134	Advanced Topics	
BIOL 3137	Advanced Special Topics with Lab	
BIOL 3330	Plant Diversity	
BIOL 3413	Ecology Laboratory	
BIOL 3521	Vertebrate Biology	
BIOL 3525	Parasitology	
BIOL 3611	General Cell Biology	
BIOL 3612	Cell Biology Laboratory	
BIOL 3640	Mammalogy	
BIOL 3650	General Microbiology	
BIOL 3651	General Microbiology Lab	
BIOL 3804	Developmental Biology	
BIOL 3832	General Genetics	
BIOL 3840	Independent Study	
BIOL 3939	Internship	
BIOL 4024	Introduction to Biotechnology	
BIOL 4050	Advanced Biology Topics	
BIOL 4052	Advanced Ecology	
BIOL 4053	Infectious Disease Ecology	
BIOL 4055	Virology	
BIOL 4125	Molecular Biology Laboratory	
BIOL 4126	Molecular Genetics	
BIOL 4128	Topics in Molecular Biology	
BIOL 4154	Conservation Biology	
BIOL 4225	Genomics and Bioinformatics	
BIOL 4250	Mechanisms of Animal Behavior	
BIOL 4274	Environmental Physiology.	
BIOL 4335	Plant Structure and Development	
BIOL 4345	Flora of Colorado	
BIOL 4415	Applied Microbial Ecology	
BIOL 4425	Biogeography	
BIOL 4460	Environmental Toxicology	
BIOL 4494	Population and Evolutionary Genetics	
BIOL 4780	Aquatic Ecology	
BIOL 4880	Directed Research	
CHEM 4700	Environmental Chemistry	
GEOG 4010	Landscape Biogeochemistry	
GEOG 4060	Remote Sensing I: Introduction to Environmental Remote Sensing	
GEOG 4080	Introduction to GIS	
GEOG 4265	Sustainability in Resources Management	
GEOG 4720	Climate Change: Causes, Impacts and Solutions	
GEOG 4731	Mountain Biogeography	
GEOG 4750	Beeography: Geography of Bees	
Total Hours		**41-42**

To learn more about the Student Learning Outcomes for this program, please visit our website. (https://clas.ucdenver.edu/integrative-biology/academics/undergraduate-programs/#biology_major-73)

To review the Degree Map for this program, please visit our website (https://www.ucdenver.edu/student/advising/undergraduate/degree-maps/clas/).