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/#policies) 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.

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 2010</td>
<td>Organisms to Ecosystems (Gen Bio)</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 2030</td>
<td>Honors Organisms to Ecosystems (Gen Bio)</td>
<td></td>
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<td>BIOL 2011</td>
<td>Organisms to Ecosystems Lab (Gen Bio)</td>
<td>1</td>
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<tr>
<td>or BIOL 2031</td>
<td>Honors Organisms to Ecosystems Lab (Gen Bio)</td>
<td></td>
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<tr>
<td>BIOL 2020</td>
<td>Molecules to Cells (Gen Bio)</td>
<td>3</td>
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<tr>
<td>or BIOL 2040</td>
<td>Honors Molecules to Cells (Gen Bio)</td>
<td></td>
</tr>
<tr>
<td>BIOL 2021</td>
<td>Molecules to Cells Lab (Gen Bio)</td>
<td>1</td>
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<td>or BIOL 2041</td>
<td>Honors Molecules to Cells Lab (Gen Bio)</td>
<td></td>
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<td>BIOL 3350</td>
<td>Diversity of Life</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 3411</td>
<td>Principles of Ecology</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 3445</td>
<td>Introduction to Evolution</td>
<td>3</td>
</tr>
<tr>
<td>BIOL 3832</td>
<td>General Genetics</td>
<td>3</td>
</tr>
<tr>
<td>or BIOL 3124</td>
<td>Introduction to Molecular Biology</td>
<td></td>
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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                                         |       |
| GEOL 4060 | Remote Sensing I: Introduction to Environmental Remote Sensing |       |
| GEOL 4080 | Introduction to GIS                                   |       |
| GEOL 4731 | Mountain Biogeography                                 |       |
| GEOL 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:
Biology - Organisms and Ecosystems Track, BS

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 4142 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
CHEM 4700 Environmental Chemistry
GEOG 4010 Landscape Biogeochemistry
GEOG 4060 Remote Sensing I: Introduction to Environmental Remote Sensing
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/).