GEOGRAPHY - ENVIRONMENTAL SCIENCE OPTION, BA

Introduction
Please click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/) to see Geography and Environmental Sciences department information.

The Geography program (within the Department of Geography and Environmental Sciences) offers a BA degree that includes a full range of courses in the fundamentals of geography taught mainly by full-time faculty.

These degree requirements are subject to periodic revision by the academic department, and the College reserves the right to make exceptions and substitutions as judged necessary in individual cases. Therefore, the College strongly urges students to consult regularly with their major advisor and CLAS advisor to confirm the best plans of study before finalizing them.

Program Delivery
• This is an on-campus program.

Declaring This Major
• Click here (http://catalog.ucdenver.edu/cu-denver/undergraduate/records-registration/registration/declare-change-major-minor/) 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/general-graduation-requirements/)
• 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 41 credit hours, including a minimum of 27 GEOG, GEOL or ENVS credit hours and 11 credit hours of ancillary coursework.
2. Students must complete a minimum of 24 upper division (3000-level and above) GEOG 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 15 GEOG, GEOL or ENVS credit hours at CU Denver.

Program Restrictions, Allowances and Recommendations
1. Only 3 credits of Travel Study may be counted toward graduation requirements.
2. Undergraduate students may count up to 6 credit hours of independent study or internship (any combination of GEOG 3840 Independent Study, GEOG 4840 Independent Study, GEOG 4880 Directed Research, or GEOG 3939 Internship) towards elective credit in the major as approved by the undergraduate coordinator. Students may not receive more than 3 credit hours per independent study section. No more than 3 credit hours of independent study may be taken with the same instructor or in the same term.
3. GEOG 3939 Internship: Community/Professional Experience optional, but highly recommended.

Required Courses
<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Hours</th>
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<tbody>
<tr>
<td>ENVS 1044</td>
<td>Introduction to Environmental Sciences and Introduction to Environmental Sciences Laboratory</td>
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<tr>
<td>or GEOG 1202</td>
<td>Introduction to Physical Geography</td>
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<tr>
<td>GEG 1102</td>
<td>World Regions Global Context</td>
<td>3</td>
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<tr>
<td>or GEG 1302</td>
<td>Introduction to Human Geography</td>
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<tr>
<td>GEG 2080</td>
<td>Introduction to Mapping and Map Analysis</td>
<td>3</td>
</tr>
<tr>
<td>GEG 3232</td>
<td>Weather and Climate</td>
<td>3</td>
</tr>
<tr>
<td>GEG 3412</td>
<td>Globalization and Regional Development</td>
<td>3</td>
</tr>
<tr>
<td>GEG 4020</td>
<td>Earth Environments and Human Impacts</td>
<td>3</td>
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<tr>
<td>GEG 4265</td>
<td>Sustainability in Resources Management</td>
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Quantitative Methods
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<tr>
<td>ANTH 4050</td>
<td>Quantitative Methods in Anthropology</td>
<td>3</td>
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<tr>
<td>GEG 4770</td>
<td>Applied Statistics for the Natural Sciences</td>
<td>3</td>
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<tr>
<td>MATH 2830</td>
<td>Introductory Statistics</td>
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<tr>
<td>PSYC 2090</td>
<td>Statistics and Research Methods</td>
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Geo-Spatial Analysis
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<tbody>
<tr>
<td>GEG 4060</td>
<td>Remote Sensing I: Introduction to Environmental Remote Sensing</td>
<td>3</td>
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<tr>
<td>GEG 4080</td>
<td>Introduction to GIS</td>
<td>3</td>
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<tr>
<td>GEG 4085</td>
<td>GIS Applications for the Urban Environment</td>
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<tr>
<td>GEG 4235</td>
<td>GIS Applications in the Health Sciences</td>
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Environmental Science Elective Course

<table>
<thead>
<tr>
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<td>Take one of the following</td>
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<tr>
<td>BIOL 3640</td>
<td>General Microbiology</td>
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<tr>
<td>BIOL 3674</td>
<td>Endocrinology</td>
<td>3</td>
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<tr>
<td>BIOL 3763</td>
<td>Biostatistics</td>
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<tr>
<td>BIOL 3804</td>
<td>Developmental Biology</td>
<td>3</td>
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<tr>
<td>BIOL 3832</td>
<td>General Genetics</td>
<td>3</td>
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<tr>
<td>BIOL 4024</td>
<td>Introduction to Biotechnology</td>
<td>3</td>
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<tr>
<td>BIOL 4052</td>
<td>Advanced Ecology</td>
<td>3</td>
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<tr>
<td>BIOL 4053</td>
<td>Disease Ecology</td>
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<tr>
<td>BIOL 4055</td>
<td>Virology</td>
<td>3</td>
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<tr>
<td>BIOL 4064</td>
<td>Cell Biology of Disease</td>
<td>3</td>
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<tr>
<td>BIOL 4126</td>
<td>Molecular Genetics</td>
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<tr>
<td>BIOL 4128</td>
<td>Topics in Molecular Biology</td>
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<tr>
<td>BIOL 4134</td>
<td>Human Genetics</td>
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<tr>
<td>BIOL 4144</td>
<td>Medical Microbiology</td>
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<tr>
<td>BIOL 4154</td>
<td>Conservation Biology</td>
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<tr>
<td>BIOL 4165</td>
<td>Neurobiology</td>
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<tr>
<td>BIOL 4225</td>
<td>Genomics and Bioinformatics</td>
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<td>BIOL 4250</td>
<td>Mechanisms of Animal Behavior</td>
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<td>BIOL 4335</td>
<td>Plant Science</td>
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<tr>
<td>BIOL 4345</td>
<td>Flora of Colorado</td>
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<tr>
<td>BIOL 4415</td>
<td>Microbial Ecology</td>
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<tr>
<td>BIOL 4425</td>
<td>Biogeography</td>
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<tr>
<td>BIOL 4430</td>
<td>Introduction to Spacial Ecology</td>
<td>3</td>
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<tr>
<td>BIOL 4460</td>
<td>Environmental Toxicology</td>
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<tr>
<td>BIOL 4464</td>
<td>Exercise Physiology</td>
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<tr>
<td>BIOL 4475</td>
<td>Mechanisms of Human Pathology</td>
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<tr>
<td>BIOL 4494</td>
<td>Population and Evolutionary Genetics</td>
<td>3</td>
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<tr>
<td>BIOL 4550</td>
<td>Cell Signaling</td>
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<tr>
<td>BIOL 4622</td>
<td>Topics in Immunology</td>
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<td>BIOL 4634</td>
<td>Biology of Cancer</td>
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<td>BIOL 4815</td>
<td>Structural Biology of Neurodegenerative Diseases</td>
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<tr>
<td>BIOL 4825</td>
<td>Biochemistry of Metabolic Disease</td>
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<tr>
<td>BIOL 4835</td>
<td>Biochemistry of Gene Regulation and Cancer</td>
<td>3</td>
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<tr>
<td>BIOL 4974</td>
<td>Advanced Evolution</td>
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Ancillary Courses

Introductory Biology or Chemistry Sequences

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
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<tbody>
<tr>
<td>Take one sequence of either general biology (BIOL 2051 and 2061 with labs) or general chemistry (CHEM 2031 and 2061 with labs). If applying to the MS in Environmental Sciences program, students are advised to take both sequences.</td>
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   **General Biology**
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<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>BIOL 2010</td>
<td>Organisms to Ecosystems (Gen Bio)</td>
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<tr>
<td>&amp; BIOL 2011</td>
<td>Organisms to Ecosystems Lab (Gen Bio)</td>
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<tr>
<td>BIOL 2020</td>
<td>Molecules to Cells (Gen Bio)</td>
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<tr>
<td>&amp; BIOL 2021</td>
<td>Molecules to Cells Lab (Gen Bio)</td>
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   **General Chemistry**
<table>
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<tr>
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<tbody>
<tr>
<td>CHEM 2031</td>
<td>General Chemistry I</td>
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<tr>
<td>&amp; CHEM 2038</td>
<td>General Chemistry Laboratory I</td>
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<tr>
<td>CHEM 2061</td>
<td>General Chemistry II</td>
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<tr>
<td>&amp; CHEM 2068</td>
<td>General Chemistry Laboratory II</td>
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Upper-Division Biology or Chemistry

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<tr>
<th>Code</th>
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<tbody>
<tr>
<td>Take one upper-division Biology or Chemistry course related to the student’s Environmental Science interest.</td>
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   **Biology**
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<tr>
<td>BIOL 3074</td>
<td>Human Reproductive Biology</td>
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<tr>
<td>BIOL 3104</td>
<td>Behavioral Genetics</td>
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<tr>
<td>BIOL 3124</td>
<td>Introduction to Molecular Biology</td>
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<tr>
<td>BIOL 3225</td>
<td>Human Physiology</td>
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<tr>
<td>BIOL 3244</td>
<td>Human Anatomy</td>
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<tr>
<td>BIOL 3330</td>
<td>Plant Diversity</td>
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<tr>
<td>BIOL 3411</td>
<td>Principles of Ecology</td>
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<tr>
<td>BIOL 3445</td>
<td>Introduction to Evolution</td>
<td>3</td>
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<tr>
<td>BIOL 3521</td>
<td>Vertebrate Biology</td>
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<tr>
<td>BIOL 3525</td>
<td>Parasitology</td>
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<tr>
<td>BIOL 3611</td>
<td>General Cell Biology</td>
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<tr>
<td>BIOL 3621</td>
<td>Introduction to Immunology</td>
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<tr>
<td>BIOL 3640</td>
<td>Mammalogy</td>
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   **Chemistry**
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<tr>
<td>CHEM 3011</td>
<td>Inorganic Chemistry</td>
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<td>CHEM 3111</td>
<td>Analytical Chemistry</td>
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<tr>
<td>CHEM 3411</td>
<td>Organic Chemistry I</td>
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<td>CHEM 3421</td>
<td>Organic Chemistry II</td>
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<td>CHEM 3481</td>
<td>Majors Organic Chemistry I</td>
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<tr>
<td>CHEM 3491</td>
<td>Majors Organic Chemistry II</td>
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<tr>
<td>CHEM 3810</td>
<td>Biochemistry</td>
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<td>CHEM 4010</td>
<td>Advanced Inorganic Chemistry</td>
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<td>CHEM 4110</td>
<td>Advanced Analytical Chemistry</td>
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<tr>
<td>CHEM 4121</td>
<td>Instrumental Analysis</td>
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<tr>
<td>CHEM 4221</td>
<td>Practical Applications of Spectroscopy</td>
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<td>CHEM 4310</td>
<td>Advanced Organic Chemistry</td>
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<tr>
<td>CHEM 4421</td>
<td>Cannabis Chemistry</td>
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<tr>
<td>CHEM 4500</td>
<td>Foundations of Physical Chemistry</td>
<td>3</td>
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<tr>
<td>CHEM 4510</td>
<td>Computational Chemistry</td>
<td>3</td>
</tr>
<tr>
<td>CHEM 4511</td>
<td>Physical Chemistry. Thermodynamics and Kinetics</td>
<td>3</td>
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<tr>
<td>CHEM 4521</td>
<td>Physical Chemistry. Quantum and Spectroscopy</td>
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<td>Advanced Topics in Chemistry</td>
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<td>CHEM 4810</td>
<td>General Biochemistry I</td>
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<td>CHEM 4815</td>
<td>Structural Biology of Neurodegenerative Diseases</td>
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<td>CHEM 4820</td>
<td>General Biochemistry II</td>
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<td>Biochemistry of Metabolic Disease</td>
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<td>CHEM 4835</td>
<td>Biochemistry of Gene Regulation and Cancer</td>
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</tr>
<tr>
<td>CHEM 4845</td>
<td>Molecular Modeling and Drug Design</td>
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<tr>
<td>CHEM 4860</td>
<td>Bioinorganic Chemistry: Bioinorganic compounds in medicine</td>
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To learn more about the Student Learning Outcomes for this program, please visit our [website](https://clas.ucdenver.edu/ges/programs/bachelor-arts/learning-goals-outcomes/).

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