

GEOGRAPHY AND ENVIRONMENTAL SCIENCES

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Overview

In the United States and around the world, balancing the preservation of the natural environment with concerns for social equality and well-being has led to a growing demand for broadly trained individuals who can identify and understand pressing social and environmental issues, collect and analyze relevant data, and develop and implement innovative solutions.

Geographers explore factors affecting the distribution of people and their activities on the surface of the earth with the goal of providing meaningful solutions to problems faced by society.

Geography's broad and holistic approach is ideally suited for liberal arts majors interested in exploring a concepts and techniques on environmental and sustainability issues, socioeconomic problems and planning policies. **Environmental Sciences** constitute a multidisciplinary study of the environment that integrate work from chemistry, biology and ecology, physics, geology, geography, anthropology, engineering, political science, law, economics, and the health sciences. Students in all programs are introduced to coursework in the **geospatial sciences**, a set of techniques that enables scholars and policymakers to use maps and geographic information systems (GIS) to explore and analyze a huge range of topics.

Careers in geography and the environmental sciences encompass a broad range of professions, from those with a strong foundation in the natural/physical sciences or engineering to those based in the social sciences and/or humanities. The department of Geography and Environmental Sciences offers a broad range of programs designed for students at multiple stages of their career, including a **BA in Geography**, an **MS in Environmental Science**, and an **MA in Applied Geography and Geospatial Sciences**. In collaboration with the College of Architecture and Planning (CAP), we also support a **PhD in Geography, Planning and Design**. Students interested in exploring one of the subfields can pursue minors in **Geography**, **Environmental Sciences**, or **Urban and Regional Planning**. We also offer certificates in **Geographic Information Systems (GIS)**, **FOSS4G** (open-source GIS), **Environmental Science Education**, and **Sustainable Urban Agriculture**.

Requirements for Admission to the Environmental Sciences, MS

The program is for students who either have baccalaureate degrees or have a significant background in one of the natural/physical sciences or engineering. In addition, minimum undergraduate science and math requirements are:

- one semester of upper-division statistics
- either two semesters of general chemistry with lab or two semesters of general biology with lab or one semester of each
- one semester of physics

If an applicant is missing one prerequisite, they can be admitted but must take an approved course as an elective before the start of their second year in the MS in Environmental Sciences degree. If two prerequisite courses are lacking, students may similarly be admitted, but must take both courses in the first year in the program. Applicants who have fulfilled all prerequisites have a better chance of acceptance. Applicants may be required to take additional prerequisite courses (necessary for completing particular core or elective courses). The prerequisite courses will not count toward the MS in environmental sciences degree.

Application Process

We accept applications once per year, on **February 1st**, for admission in the following fall.

As part of the admission review process, applicants are required to submit:

- an online graduate application
- a minimum of three letters of recommendation (letters from both professional and academic sources are accepted, though academic letters are preferred).
- official transcripts from all institutions previously attended
- the GRE is not required. However, applicants with less than a 3.0 GPA are welcome to submit GRE scores as further evidence of their qualifications

CU Denver has a minimum requirement of a 3.0 undergraduate GPA for applicants to graduate programs. Admissions for students with a GPA below 3.0 may be possible under special circumstances. The program admits new students for the fall semester only, and the number of students admitted to the program depends, in part, on space availability. Applicants must submit all materials by the February 1st deadline.

Requirements for Admission to the Applied Geography & Geospatial Science, MA

Applicants must hold a Bachelor's degree from an accredited institution.

The University of Colorado Denver has a minimum requirement of 3.0 undergraduate grade point average (GPA) for applicants to graduate programs. The number of applicants admitted to the MA in Applied Geography & Geospatial Science in any year depends, in part, on space availability. The program is competitive, and we generally discourage applicants whose undergraduate GPA is below 3.0. Notification of acceptance or refusal for admission into the program is mailed to the applicant approximately six weeks after the deadline for submission of applications.

Application Process

We accept applications once per year, before or on **February 1st**, for admission in fall of the same year.

As part of the admission review process, applicants are required to submit:

- a graduate application
- statement of purpose that articulates the goals of pursuing a graduate degree in this program
- a minimum of three letters of recommendation (letters from both professional and academic sources are accepted, though academic letters are preferred).
- official transcripts from all institutions previously attended
- the GRE is **not** required. However, applicants with less than a 3.0 GPA are welcome to submit GRE scores as further evidence of their qualifications

Programs

- Applied Geography & Geospatial Science, MA (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/applied-geography-geospatial-science-ma/>)
- Environmental Sciences, MS (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/environmental-sciences-ms/>)
- Environmental Science Education Graduate Certificate (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/environmental-science-education-graduate-certificate/>)
- Free and Open Source Software for Geospatial Applications Graduate Certificate (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/free-open-source-software-geospatial-applications-graduate-certificate/>)
- Geographic Information Science Graduate Certificate (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/geographic-information-science-graduate-certificate/>)
- Sustainable Urban Agriculture Graduate Certificate (<http://catalog.ucdenver.edu/cu-denver/graduate/schools-colleges-departments/college-liberal-arts-sciences/geography-environmental-sciences/sustainable-urban-agriculture-graduate-certificate/>)

Faculty

Professors:

Anne Chin, PhD, Arizona State University
Pamela Jansma, PhD, Northwestern University (CLAS Dean)
Rafael Moreno-Sanchez, PhD, Colorado State University
Gregory Simon, PhD, University of Washington

Professors Emeriti:

Rudi Hartmann, PhD, Technical University of Munich
Wesley E. LeMasurier, PhD, Stanford University
Martin Lockley, PhD, University of Birmingham, England
John W. Wyckoff, PhD, University of Utah

Associate Professors:

Peter Anthamatten, PhD, University of Minnesota
Christy Briles, PhD, University of Oregon
Frederick B. Chambers, PhD, Arizona State University
Brian Page, PhD, University of California, Berkeley
Bryan S. Wee, PhD, Purdue University

Assistant Professors:

Benjamin Crawford, PhD, University of British Columbia, Vancouver
Katharine Kelsey, PhD, University of Colorado Boulder
Lisa Kelley, PhD, University of California Berkley

Assistant Professors Clinical Teaching Track:

Thomas Duster, PhD, University of Notre Dame

Senior Instructors:

Amanda Weaver, PhD, University of Denver

Instructors:

Kirsten Christensen, MSS, MURP, University of Colorado Denver
Yi-Chia Chen, PhD, Louisiana State University

Lecturers:

Richard Ashmore
Tim Connors
Alicia Cowart
Hope Dalton
Richard DeGrandchamp
Amy DePierre
David Murray
Ricardo Oliveira
Mandy Rees

Geography (GEOG)

GEOG 5022 - Federal Data for Health Research & Policy (1-3 Credits)
 Students will develop the knowledge and skills required to effectively use a variety of federal and statistical data sets for health research and policy analysis. Each week is devoted to one or two federal statistical datasets—data collection methods; why they are collected and what health issues they are designed to address; what population they represent and at what geographic scale. Most critically, students will be able to distinguish between questions that can be addressed with a public version of the data and questions that require restricted versions of the data that are protected by federal law and guidelines. Students will read, discuss and present research from various perspectives (Demography, Economics, Geography, Public Health, Sociology) using these data sources and apply their knowledge of data analysis from a variety of perspectives. Students will learn how to gain access to restricted data, how to protect individual anonymity with best practice disclosure avoidance techniques and will develop a research proposal for confidential research access. Note: Familiarity with SAS (preferable) or other statistical software such as SPSS or Stata and statistics or data analysis is recommended. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ECON 6022, HBSC 6022, and SOCY 5022. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5050 - Applied Spatial Statistics (3 Credits)

Practice and application of spatial analytical and statistical methods using modern GIS and spatial statistical software. Topics include spatial data handling, interpolation, pattern analysis, cluster detection, visualization, and modeling. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better. Note: an introductory course in statistics is strongly recommended for success in this course. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better.

Typically Offered: Fall.

GEOG 5060 - Remote Sensing I: Introduction to Environmental Remote Sensing (3 Credits)

An in-depth treatment of the use of aerial photographs and other forms of imagery for the analysis of urban-industrial patterns, vegetation, agriculture, landforms, and geologic structure. Cross-listed with GEOG 4060. Completion of GEOG 2080 with a C or better is recommended for optimal student success. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring, Summer.

GEOG 5070 - Remote Sensing II: Advanced Remote Sensing (3 Credits)

Focuses on digital image processing of satellite and aerial images. Students explore the nature of digital image data, gain an understanding of image analysis using PCs, and learn about the use of analysis products in the development of GIS databases. Prereq: Graduate standing and GEOG 4060/5060 with a B- or better or permission of instructor. Cross-listed with GEOG 4070. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4060/5060 with a B- or better.

Typically Offered: Spring.

GEOG 5080 - Introduction to GIS (3 Credits)

Introduces Geographic Information Systems (GIS), including justification, hardware/software, database design, and data conversion. GIS is a computer-based mapping system providing a graphical interface to locational and relational attribute data. Includes hands-on use of a GIS workstation. Cross-listed with GEOG 4080. Prereq: Graduate standing. Term offered: fall, spring, summer. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall, Spring, Summer.

GEOG 5081 - Cartography (3 Credits)

Provides an introduction to the art and science of cartography (map making). Students will learn about design principles, tools and techniques of map production, culminating in the creation of a high-quality map through hands-on exercises. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better. Note: Completion of GEOG 2080 with a C or better is recommended for optimal student success. Cross-listed with GEOG 4081. Term offered: fall, spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of C or better

Typically Offered: Fall, Spring.

GEOG 5085 - GIS Applications for the Urban Environment (3 Credits)

Takes a more detailed look at basic concepts presented in the introductory GIS course, concentrating on how GIS is used to solve real-world geographic problems. Various GIS applications within both the natural and social sciences are highlighted. The selection of specific topics is flexible, based on the interests of enrolled students. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better. Cross-listed with GEOG 4085. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better.

Typically Offered: Spring.

GEOG 5086 - FOSS4G Systems Integration (3 Credits)

Focuses on the integration of different FOSS4G (Free and Open Source Software for Geospatial Applications) software and technologies to create geospatial information systems that access data from different sources, storage structures, and formats to provide information to support decision making processes. Prereq: Graduate (including non-degree graduate) standing and GEOG 4091 or 5091, and GEOG 4092 or 5092 with a B- or higher. Cross-listed with GEOG 4086. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate (including non-degree graduate) standing and GEOG 4091 or 5091, and GEOG 4092 or 5092 with a B- or higher.

GEOG 5090 - Environmental Modeling with Geographic Information Systems (3 Credits)

Applies raster spatial analysis and modeling to study processes and spatial relationships to support decisionmaking in natural and built environments. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better. Cross-listed with GEOG 4090. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better.

Typically Offered: Fall.

GEOG 5091 - Open Source Software for Geospatial Applications (3 Credits)

Students will master the individual use and integration of a stack of the most powerful Free and Open Source Software for Geospatial Applications (FOSS4G) to analyze spatial problems and create Spatial Data Infrastructures in different technological, socio-economic and organizational settings. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better. Cross-listed with GEOG 4091. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better.

GEOG 5092 - GIS Programming and Automation (3 Credits)

Students will learn the most commonly used programming language to automate GIS geoprocessing tasks and workflows in the latest versions of the most popular GIS systems. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better. Cross-listed with GEOG 4092. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better.

Typically Offered: Fall.

GEOG 5095 - Deploying GIS Functionality on the Web (3 Credits)

Covers the core principles and technologies that allow the deployment of geographic information system (GIS) functionality over the World Wide Web. Hands-on exercises make use of the latest commercial software as well as open source technologies. Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better.

Cross-listed with GEOG 4095. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Prereq: Graduate standing and GEOG 4080 or GEOG 5080 or CVEN 5381 with a grade of B- or better.

Typically Offered: Spring.

GEOG 5150 - Place, Landscape, and Meaning (3 Credits)

Investigates the concepts of place, landscape, and their meanings. Incorporates theoretical and experiential perspectives to understand how socio-spatial interactions construct diverse identities and their implications for equity. Note: this course assumes that students have completed an introductory human geography course. Prereq: Graduate standing. Cross-listed with GEOG 4150. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

GEOG 5220 - Environmental Impact Assessment (3 Credits)

The objective of this course is to provide the foundation for understanding the environmental impact assessment process, its legal context, and the criteria and methods for procedural and substantive compliance. Cross-listed with GEOG 4220, URPL 6549. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

GEOG 5230 - Hazard Mitigation and Vulnerability Assessment (3 Credits)

Examines hazard mitigation and its planning and policy implications, emphasizing how vulnerability assessments play an integral role. Students explore how mitigation minimizes the impacts from hazards and use GIS to conduct a local study. Note: this course assumes that students have completed GEOG 2202 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4230. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

GEOG 5235 - GIS Applications in the Health Sciences (3 Credits)

Examines how GIS is used throughout the health care industry and public health. Covers environmental health, disease surveillance, and health services research. Students critically review current literature and gain hands-on experience with GIS software. Note: this course assumes that students have completed GEOG 4080 or GEOG 5080 and/or have a background in public health. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4235, HBSC 7235. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5240 - Applied Geomorphology (3 Credits)

Uses hands-on tasks and field trips to investigate processes behind Earth's changing landforms in a variety of physical landscapes (aeolian, volcanic, coastal, fluvial, karst, glacial and periglacial) as related to rock decay, soils and climatic forcings. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 and GEOG 3232.

Prereq: Graduate standing. Cross-listed with GEOL 4240, 5240 and GEOG 4240. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

GEOG 5251 - Fluvial Geomorphology (3 Credits)

Examines interactions between Earth's surface and flowing water across spatial and temporal scales. Considers structure and function of the major components of fluvial systems, with particular attention to the variety of fluvial systems to hydrologic, geologic and anthropogenic controls. Cross-listed with GEOG 4251, GEOL 4251 and GEOL 5251.

Restriction: Restricted to Graduate and Graduate Non-Degree students.

Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5265 - Sustainability in Resources Management (3 Credits)

Sustainability and sustainable development are the dominant economic, environmental and social issues of the 21st century. Follows a multi-disciplinary approach to these concepts. Case studies demonstrate their implementation in different geographical, ecological and socio-economic conditions worldwide. Note: this course assumes that students have completed ENVS 1042 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4265. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5270 - Glacial Geomorphology (3 Credits)

Provides an in-depth view of the processes and systems found in glacial environments. Topics include: evidence of past glaciation; present-day glacial extent; glacier dynamics; glacial erosional processes and landforms; glacial depositional processes and landforms. Note: this course assumes that students have completed GEOG 1202 or GEOL 1072 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4270, GEOL 4270 and GEOL 5270. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

GEOG 5300 - Children's Geographies (3 Credits)

This seminar is an investigation of children, childhood, and environment from geographical perspectives. Theoretical and methodological lenses are used to understand young people's interactions with/in different spaces. Cross-listed with ENVS 5300. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

GEOG 5335 - Contemporary Environmental Issues (3 Credits)

Provides an overview of environmental challenges facing society today, focusing on how humans impact and change the environment. Opposing views and environmental policy at the local, state, national, and international levels are explored. Cross-listed with GEOG 4335. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

GEOG 5350 - Environment and Society in the American Past (3 Credits)

Overview of the geographical development of North American society from the late 15th century to the mid-20th century. A comparative regional approach emphasizing relationships between natural resource exploitation, cultural landscape formation and environmental change. Cross-listed with GEOG 4350. Prereq: Graduate standing. Term offered: fall. Max Hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

GEOG 5380 - Anthropocene Futures (3 Credits)

We are living in the "Anthropocene"—an era of rapid environmental and societal changes, and of decline and loss resulting from accelerating human interactions with Earth systems. Warming climates, wildfires, floods, water and food insecurity, novel ecosystems, and even pandemics such as COVID-19, are phenomena of the Anthropocene. With a still growing human population and a finite planet, understanding and overcoming such challenges is more pressing than ever, if people are to co-evolve with Earth toward a sustainable future. This interdisciplinary seminar course tells the scientific story of humanity's intensifying interactions with the planet and explores possible future paths. Through presentations, readings and discussion, students will examine topics that include the origin and significance of Anthropocene in Earth's evolutionary history, the debates and evidences for a new geologic epoch, large-scale trajectories of environmental change, a safe operating space, and planting seeds for a "good" Anthropocene. In doing so, students will acquire skills and experiences in critical thinking and analytical reasoning to grapple with many uncertainties and tensions of the Anthropocene.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors.

Cross-listed with GEOG 4380, ENVS 4380, and ENVS 5380. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

GEOG 5420 - The Politics of Nature (3 Credits)

"Examines how economic systems, scientific discovery, institutional policies, and environmental knowledge converge to shape the environment and mediate the way societies understand, manage and respond to environmental changes in both the United States and the developing world. Cross-listed with GEOG 4420. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Max hours: 3 Credits."

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5440 - Science, Policy and the Environment (3 Credits)

Examines the social, economic and political forces shaping scientific discovery and the development and enforcement of environmental policy. Students will examine perspectives on issues such as risk, expertise, uncertainty and objectivity that influence the problem-defining, standard-setting and policy-making process. Cross-listed with GEOG 4440. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

GEOG 5640 - Urban Geography: Denver and the U.S. (3 Credits)

Uses a combined lecture/seminar format to explore research themes in urban geography. Topics covered include both historical and contemporary processes of urban development and transformation. Particular emphasis is placed on the U.S. and Colorado's Front Range. Cross-listed with GEOG 4640. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

GEOG 5680 - Urban Sustainability: Perspectives and Practice (3 Credits)

Examines various perspectives on sustainability, including ambiguities and opportunities of sustainability as a conceptual framework. Class also examines what sustainability looks like in practice, using numerous topics such as poverty and urban farming to water and climate change. Cross-listed with GEOG 4680. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

GEOG 5710 - Disasters, Climate Change, and Health (3 Credits)

Provides a review of the impacts of disasters and climate change on human health, using a broad framework of preparedness, mitigation, response, recovery, and adaptation. Note: this course assumes that students have completed GEOG 2202 or GEOG 3501. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5720 - Climate Change: Causes, Impacts and Solutions (3 Credits)

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-listed with GEOG 4720/ ENVS 4720/ ENVS 5720. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5740 - Soil Science and Geography (3 Credits)

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, ENVS 4740, ENVS 5740. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

GEOG 5750 - Beeography: Geography of Bees (4 Credits)

Beeography is an introduction to the bee world and the amazing diversity in Colorado and beyond. The course will examine the distribution of bees and the pressures they face in different environmental and cultural contexts. It will examine different methods to support and increase bee populations and pollination services, especially in populated environments, including backyard beekeeping of honeybee and native bee populations. Field and lab activities will include beekeeping, native bee collection and identification, bee dissections, pollen processing and identification, and trips to area bee museum collections and apiaries. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4750, ENVS 4750, and ENVS 5750. Term offered: spring. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

GEOG 5757 - Urban Climate and Air Quality (3 Credits)

Explores how people alter climates on micro- to regional scales, and how this in turn affects human health and society. Focuses on recent scientific research, physical processes within cities, and the role of urbanization in global climate change. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ENVS 5757. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

GEOG 5840 - Independent Study (1-3 Credits)

Section 1, economic; 2, physical; 3, urban; 4, social; 5, quantitative; 6, transportation. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Department consent required. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

GEOG 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

GEOG 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Department consent required. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

GEOG 5990 - Special Topics In Geography (1-6 Credits)

Course content varies from semester to semester, depending on faculty member teaching the course. Prereq: Graduate standing. Repeatable.

Max hours: 6 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education.

Restriction: Restricted to Graduate and Graduate Non-Degree majors.

Cross-listed with ENVS 4995, ENVS 5995, and GEOG 4995. Max hours: 12 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 12.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Global Education Study Abroad.

GEOG 6300 - Foundations Seminar in Human-Environmental Interaction (3 Credits)

This seminar allows students to gain a deeper appreciation for historical and contemporary geographical approaches to understanding the relationship between society and the environment through a survey review of seminal concepts, theories and debates that have shaped the discipline. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

GEOG 6700 - Integrated Methods (3 Credits)

Geographers employ a variety of quantitative and qualitative methods in their research. The course presents these methods as a continuum, rather than separate typologies, and reviews the difference between integrated and mixed methods. Students will evaluate how and when to apply various methods to most appropriately elicit data. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6750 - Research Design (3 Credits)

Reviews research framework common to all geographers. Reviews the key steps in designing and executing high-caliber independent research, including topic selection, literature review and data collection analysis. Students will develop competence in applying relevant theories from the natural and social sciences through projects. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

GEOG 6800 - Community-Based Research Practicum (4 Credits)

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prereq: GEOG 6300 with a B- or higher. Cross-listed with ENVS 6800. Term offered: spring. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: GEOG 6300 with a B- or higher.

Typically Offered: Spring.

GEOG 6840 - Independent Study: GEOG (1-3 Credits)

Independent research for graduate major students. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Prereq: Permission of department. Max hours: 3 Credits.

Grading Basis: Letter Grade

GEOG 6950 - Master's Thesis (1-6 Credits)

Department consent required. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Prereq: Graduate standing. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

GEOG 8990 - Doctor's Thesis (1-8 Credits)

Department consent required. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Prereq: Graduate standing. Repeatable. Max hours: 8 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 8.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

Environmental Science (ENVS)

ENVS 5010 - Landscape Biogeochemistry (3 Credits)

A holistic approach to studying the role chemical elements play in synthesis/decomposition cycles, and the resultant environment from interaction of the lithosphere with the hydrosphere, atmosphere, biosphere, and pedosphere during geological, and ecological timeframes, together with anthropogenic activities. Note: this course assumes that students have completed an introductory college-level physical geography or environmental science course. Prereq: Graduate standing. Cross-listed with GEOG 4010/GEOL 4010. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5020 - Earth Environments and Human Impacts (3 Credits)

This course examines the multitude of impacts that humans have exerted on Earth's biomes and physical environment in a systems context, including vegetation, animals, soils, water, landforms and the atmosphere. It considers the ways in which climate changes and modifications in land cover have altered the environment, and how such changes will still accelerate in in coming decades. The course also explores emergent topics such as rewilding, novel and no analogue ecosystems, and ecosystem services. Additionally, it assesses the future impact of a growing human population on the planet within a context of the "anthropocene," an era dominated by human activity. Prereq: Graduate standing. Cross-listed with GEOG 4020, GEOL 4020. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

ENVS 5280 - Environmental Hydrology (4 Credits)

Examination of hydrologic processes in relation to climate, soils, vegetation, land-use practices, and human interactions. Natural scientific perspectives emphasized; field and laboratory included. Note: this course assumes that students have completed GEOG 1202 and one of:

1) GEOG 3232; 2) GEOG 4240/GEOL 4240/GEOG/5240; 3)GEOG 4010/GEOL 4010/ENVS 5000. Prereq: Graduate standing. Term offered: spring. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5300 - Children's Geographies (3 Credits)

This seminar is an investigation of children, childhood, and environment from geographical perspectives. Theoretical and methodological lenses are used to understand young people's interactions with/in different spaces. Cross-listed with GEOG 5300. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5305 - Water Quality and Resources (3 Credits)

Introduces water resources aimed at students with little or no background in the field. This is a broad course covering topics ranging from the physical aspects of water to water politics and international law. While the course is largely a lecture format, discussion of current issues is a significant part of the class. Restriction: Restricted to Graduate and Graduate Non-Degree majors. Cross-listed with GEOG 4305. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Spring.

ENVS 5340 - Equity & Culture in Science Education: Local/Global (3 Credits)

This course examines literature in science education related to issues of culture and equity. Topics will be framed by an understanding of equity in diverse classrooms and how it informs research, curriculum and instruction. Cross-listed with SCED 5340 and SCED 4340. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5380 - Anthropocene Futures (3 Credits)

We are living in the “Anthropocene”—an era of rapid environmental and societal changes, and of decline and loss resulting from accelerating human interactions with Earth systems. Warming climates, wildfires, floods, water and food insecurity, novel ecosystems, and even pandemics such as COVID-19, are phenomena of the Anthropocene. With a still growing human population and a finite planet, understanding and overcoming such challenges is more pressing than ever, if people are to co-evolve with Earth toward a sustainable future. This interdisciplinary seminar course tells the scientific story of humanity’s intensifying interactions with the planet and explores possible future paths. Through presentations, readings and discussion, students will examine topics that include the origin and significance of Anthropocene in Earth’s evolutionary history, the debates and evidences for a new geologic epoch, large-scale trajectories of environmental change, a safe operating space, and planting seeds for a “good” Anthropocene. In doing so, students will acquire skills and experiences in critical thinking and analytical reasoning to grapple with many uncertainties and tensions of the Anthropocene. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 4380, GEOG 5380, and ENVS 4380. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

ENVS 5403 - Unsaturated Zone Hydrology (3 Credits)

Focuses on water and contaminant transport through the unsaturated zone, infiltration and drainage, and heat and gas transport. Students learn to design, perform field installation, and collect data in order to model and predict contaminant movement on/off site. Note: this course assumes that students have prior coursework in chemistry, physics, or calculus. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5410 - Aquatic Chemistry (3 Credits)

Course objectives are to: (1) identify and understand chemical and physical principles and processes that control the composition of natural water, (2) prepare students to critically evaluate scientific literature and experimental design related to water quality and environmental remediation, and (3) examine the validity of environmental water data. Note: this course assumes that students have completed general chemistry and/or CHEM 4700. Prereq: Graduate standing. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

ENVS 5450 - Urban Food and Agriculture: Perspectives and Research (3 Credits)

Provides an overview of research & practices in urban farming. Critically reviews emergent models of local food production/distribution. Compares new practices to traditional agribusiness. Assesses the prospects for solving sustainability problems within the modern agro-food system. Note: this course assumes that students have completed GEOG 3401. Prereq: Graduate standing. Cross-listed with GEOG 4450. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

ENVS 5460 - Sustainable Urban Agriculture Field Study I (3 Credits)

Provides a field-based overview of urban farm planning & management. Topics: range/land conservation, native/invasive species, water distribution, animal husbandry, government interaction, local markets, community relations, conservation easements and issues pertaining to urban farming. Note: this course assumes that students have completed ENVS 5450. Prereq: Graduate standing. Cross-listed with GEOG 4460. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

ENVS 5470 - Sustainable Urban Agriculture Field Study II (3 Credits)

Provides a field-based overview of current practices in local agricultural production. Emphasis will be placed on sustainable practices and their most efficient situation, Special consideration will be given to plausible solutions for food insecure communities both local and global. Note: this course assumes that students have completed ENVS 5450 and 5460. Prereq: Graduate standing. Cross-listed with GEOG 4470. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

ENVS 5480 - Urban Vegetable CSA: Planning, Production&Distribution (3 Credits)

This course outlines the planning, production, and distribution in an active urban vegetable CSA (community supported agriculture) model. It is offered as a part of the GES Sustainable Urban Agriculture Certificate. Cross-listed with GEOG 4480. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5500 - Topics in Environmental Sciences (1-6 Credits)

Topics may vary from one offering to the next. Prereq: Graduate standing. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 9.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5600 - Applied Statistics for the Natural Sciences (3 Credits)

Surveys statistical techniques including: quick review of basic statistics, tests for normality and outliers, display of data; simple and multiple regression; ANOVA and its relation to regression. Emphasis on computer or stat-pak analysis and interpretation of statistical results. Note: this course assumes that students have completed college algebra and GEOG 3080 or equivalent. Prereq: Graduate standing. Cross-listed with GEOG 4770. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5620 - Health Risk Communication (3 Credits)

We are bombarded all day with communication expressing a sense of risk, of danger, of threats to our individual and communal well-being. This class acquaints students with contemporary theory, research, and practice in health risk communication across a variety of threats both real and imagined. Cross-listed with COMM 5620, COMM 4620, and PBHL 4620. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5650 - Environmental Education (3 Credits)

This course links the theory and practice of environmental education to inform curricular development and pedagogical knowledge. Prereq: Graduate standing. Cross-listed with ENVS 4650 and SCED 5650. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5660 - Introduction to Smart Cities (3 Credits)

This course will explore some of the most change-making technological innovations in the 21st century and their impact on public policy in cities through a survey of best practices, model policies, and lessons learned from cities across the United States and globe. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ENGR 6299, PUAD 5627, and URPL 6299. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5700 - Synthesis for Interdisciplinary Science (3 Credits)

Synthesis is an approach in interdisciplinary research and education that links ideas, data and methods. This course develops synthesis skills through the lens of systems theory. It includes exercises for synthetic thinking, examination of integrative tools, and a service-learning project. Cross-listed with GEOG 4700. Breadth and depth training in environmental sciences. Interest in interdisciplinary collaboration. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5720 - Climate Change: Causes, Impacts and Solutions (3 Credits)

Examines science behind past, present & future climate change & environmental, social & political implications & solutions. Explores recent scientific research, syntheses & mainstream literature advancing knowledge about causes & consequences of natural & anthropogenic climate change. Cross-listed with GEOG 4720/ GEOG 5720/ ENVS 4720. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

ENVS 5730 - Air Quality Modeling and Analysis (3 Credits)

Emphasizes the use of air dispersion modeling tools. Topics include: sources and effects of air pollution, use of the WWW, and analysis of modeling results. Note: For graduate students in environmental sciences or engineering, and for those working in the environmental field. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5731 - Mountain Biogeography (4 Credits)

This hands-on research course will focus on the current and past distribution of plants and changes in disturbance regimes in the mountains using environmental proxy data preserved in lake sediment cores. A field trip will occur early in the semester. Restriction: Restricted to Graduate and Graduate Non-Degree students. Cross-listed with GEOG 4731. Term offered: fall. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

ENVS 5740 - Soil Science and Geography (3 Credits)

Reviews chemical and physical properties of soils, soil development, and geographic distributions of soil types in the context of the role that soils play in natural and human-altered ecosystems. Prereq: graduate standing or permission of instructor. Cross-listed with GEOG 4740, GEOG 5740, ENVS 4740. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

ENVS 5750 - Beeography: Geography of Bees (4 Credits)

Beeography is an introduction to the bee world and the amazing diversity in Colorado and beyond. The course will examine the distribution of bees and the pressures they face in different environmental and cultural contexts. It will examine different methods to support and increase bee populations and pollination services, especially in populated environments, including backyard beekeeping of honeybee and native bee populations. Field and lab activities will include beekeeping, native bee collection and identification, bee dissections, pollen processing and identification, and trips to area bee museum collections and apiaries.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors.

Cross-listed with GEOG 4750, GEOG 5750, and ENVS 4750. Term offered: summer. Max hours: 4 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Summer.

ENVS 5757 - Urban Climate and Air Quality (3 Credits)

Explores how people alter climates on micro- to regional scales, and how this in turn affects human health and society. Focuses on recent scientific research, physical processes within cities, and the role of urbanization in global climate change. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with GEOG 5757. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Typically Offered: Fall.

ENVS 5780 - Aquatic Ecology (3 Credits)

This course explores the physical, chemical, and biological (including human) properties of aquatic ecosystems, and how the interrelationships between these properties define and influence advanced ecological processes. Special focus is given to lakes, reservoirs, wetlands, streams, rivers, and groundwater. Learning is facilitated through lectures, discussions, student presentations, laboratory and data exercises, and periodic (often virtual) field excursions. Restriction: Restricted to Graduate and Graduate Non-Degree Majors. Cross-listed with ENVS 4780, BIOL 4780, and BIOL 5780. Max hours: 3 Credits.

Grading Basis: Letter Grade

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 5840 - Independent Study: ENVS (1-3 Credits)

Department consent required. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 6.

Typically Offered: Fall, Spring, Summer.

ENVS 5880 - Directed Research (1-6 Credits)

Students will engage in original research projects supervised and mentored by faculty. Students must work with faculty prior to registration to develop a proposal for their project and receive permission to take this course. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Repeatable. Max Hours: 6 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 6.

ENVS 5939 - Internship (1-6 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Repeatable. Max Hours: 9 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 9.

ENVS 5995 - Global Study Topics (3-9 Credits)

This course is reserved for CU Denver faculty-led study abroad experiences. The course topic will vary based on the location and course content. Students register through the Office of Global Education. Prereq: Graduate standing. Cross-listed with ENVS 4995, GEOG 4995, and GEOG 5995. Repeatable. Max hours: 12 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 12.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Additional Information: Global Education Study Abroad.

ENVS 6000 - Environmental Sciences Seminar (1 Credit)

Student and faculty presentations of UCDHSC research projects and other current environmental sciences topics. All environmental sciences students are encouraged to attend, but credit is given only to students who present seminars. Two semesters of this course are required to receive a M.S. in Environmental Science degree: these students must register for this seminar and give presentations the first semester they are in the M.S.E.S. program and the semester in which they defend their master's project. Prereq: Graduate standing. Term offered: fall. Repeatable. Max Hours: 2 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 2.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

ENVS 6002 - Research Topics in Environmental Sciences (3 Credits)

Introduces research and professional development in the environmental sciences, focusing on current issues and trends in the field, methods of developing research, reading scientific literature, and guiding students in designing their course of study. Students are introduced to the environmental sciences faculty and their research programs. Prereq: Graduate standing. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade
Repeatable. Max Credits: 6.
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall, Spring.

ENVS 6004 - Research Methods in Environmental Science (3 Credits)

This core MS Environmental Science course will explore a range of methods commonly encountered in environmental science fields and how to develop a research project and proposal. Prereq: ENVS 6002 with a C or higher. Max hours: 3 Credits.

Grading Basis: Letter Grade
Prereq: ENVS 6002 with a C or higher.

ENVS 6100 - Research Topics in Environmental Management (3 Credits)

This is one of 4 core MS Environmental Science courses that will review and apply the principles and methods involved in designing and implementing effective environmental management. Prereq: ENVS 6002 with a C or higher. Max hours: 3 Credits.

Grading Basis: Letter Grade
Prereq: ENVS 6002 with a C or higher.

ENVS 6200 - Risk Assessment (3 Credits)

The process of determining the likelihood and extent of harm that may result from an activity or event. Topics covered are: hazard identification, dose-response evaluation, exposure assessment, and risk characterization. The subjects of risk management, risk perception, and risk communication are also discussed. Cross-listed with HBSC 7340. Prereq: Graduate standing. Term offered: fall. Max hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Fall.

ENVS 6210 - Human Health and Environmental Pollution (3 Credits)

Examines the roles of technology and society in the etiology and control/prevention of adverse health outcomes associated with releases of toxic substances. Examples come from experience and the literature on occupational cancer and reproductive hazards, occupational and environmental regulation of hazardous wastes, air, and water pollution. Cross-listed with HBSC 7210. Prereq: Graduate standing. Max hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6220 - Toxicology (3 Credits)

Introduces the field of toxicology. Emphasizes the mechanisms by which chemicals produce toxic effects and the methods for assessing toxicity. Note: Designed for students in the environmental sciences and occupational health fields. Note: this course assumes that students have completed one year of college chemistry and one year of college biology. Prereq: Graduate standing. Cross-listed with HBSC 7360. Term offered: spring. Max hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors
Typically Offered: Spring.

ENVS 6230 - Environmental Epidemiology (3 Credits)

Provides a basic understanding of the methods used to study the effects on human health of exposures to physical, chemical, or biological factors in the external environment. The course explains the use of epidemiologic methods through a problem solving approach to investigating environmental health case studies. Note: this course assumes that students have completed a basic statistics course. Prereq: Graduate standing. Cross-listed with HBSC 7310. Max hours: 3 Credits.

Grading Basis: Letter Grade
Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6800 - Community-Based Research Practicum (4 Credits)

For students to apply the concepts and skills presented throughout the masters program in a community setting. Students will participate in a real-world, studio-based project that meets the needs of a government, non-governmental, or private sector organization and will produce a scoped product. Prereq: ENVS 6002 with a grade of B- or higher. Cross-listed with GEOG 6800. Term offered: spring. Max hours: 4 Credits.

Grading Basis: Letter Grade

Prereq: ENVS 6002 with a grade of B- or higher.

Typically Offered: Spring.

ENVS 6840 - Independent Study: ENVS (1-3 Credits)

Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Prereq: Graduate standing. Department consent required. Repeatable. Max hours: 3 Credits.

Grading Basis: Letter Grade

Repeatable. Max Credits: 3.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

ENVS 6950 - Master's Thesis (1-6 Credits)

Department consent required. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Prereq: Graduate standing. Repeatable. Max hours: 11 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 11.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.

ENVS 6960 - Master's Report (3-6 Credits)

Department consent required. Note: Students must submit a special processing form completely filled out and signed by the student and faculty member, describing the course expectations, assignments and outcomes, to the CLAS Graduate Academic Services Coordinator for approval. Prereq: Graduate standing. Repeatable. Max hours: 6 Credits.

Grading Basis: Letter Grade with IP

Repeatable. Max Credits: 6.

Restriction: Restricted to Graduate and Graduate Non-Degree Majors

Additional Information: Report as Full Time.