

SUSTAINABILITY

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Sustainability is a concept that is becoming increasingly important as human societies recognize the finite nature of many natural resources and the lingering ill effects of overconsumption, pollution and poorly planned land uses. Sustainability is defined as meeting the needs of the current generation without compromising the ability of future generations to meet their own needs and to do so while maintaining ecological processes, functions, biodiversity and productivity into the future. An understanding of sustainability includes the scientific basis for sustainable resource use as well as the social and economic implications and/or costs of sustainable practices. Given the state of the global economy, the social unrest that is building throughout many parts of the world, the ultimate dependence of both developed and developing nations on an increasingly stressed natural environment, and the connections between these, moving toward a sustainable future requires an interdisciplinary perspective of the challenges facing society today.

The program requirements for the Sustainability Science major are listed on the Geography and the Environment (<http://bulletin.du.edu/undergraduate/majorsminorscoursedescriptions/traditionalbachelorsprogrammajorandminors/geographyandtheenvironment/>) bulletin page.

Sustainability Minor Requirements

Minimum of 24 credits as follows:

Code	Title	Credits
Gateway Course		4
GEOG 2500 or GEOG 2511	Sustainability & Human Society Principles of Sustainability - Honors	
Elective Lens Courses		16
16 elective credits, including at least one course from each of the three "lens" categories: Natural & Physical Sciences; Social Sciences; and Arts & Humanities.		
Natural/Physical Science Electives (select at least one from this category)		
BIOL 2010	General Ecology	
BIOL 3035	Invasive Species Ecology	
BIOL 3055	Ecology of the Rockies	
BIOL 3070	Ecological Field Methods	
BIOL 3095	Global Change Ecology	
BIOL 3044	Coral Reef Ecology	
BIOL 3045	Coral Reef Ecology Lab	
BIOL 3085	Insect Ecology	
BIOL 3110	Special Topics: Biology	
BIOL 3350	Conservation Biology	
BIOL 3700	Topics in Ecology	
BIOL 3707	Advanced Topics in Conservation Biology	
CHEM 2240	Introduction to Environmental Chemistry	
CHEM 3410	Atmospheric Chemistry	
CHEM 3411	Aquatic Chemistry	
CHEM 3412	Environmental Chemistry & Toxicology	
EALC 2001	ESLLC: Local and Regional Environmental Issues (LLC: restricted)	
EALC 2002	ESLLC: The Impact of Development on the Environment (LLC; restricted)	
EALC 2003	ESLLC: Energy in American Society (LLC; restricted)	
GEOG 2608	Human Dimensions of Global Change	
GEOG 2700	Contemporary Environmental Issues	
GEOG 2730	Geography of Surfing	

GEOG 2880	Geographies of South Africa
GEOG 3120	Environmental/GIS Modeling
GEOG 3520	Geography of Soils
GEOG 3610	Climatology
GEOG 3620	Applied Climatology
GEOG 3630	Dendroclimatology
GEOG 3640	Climate Change and Society
GEOG 3720	Mountain Environments and Sustainability
GEOG 3750	Topics in Human-Environment Interactions
GEOG 3800	Geography of Colorado
GEOG 3870	Water Resources & Sustainability
GEOG 2320	Andean Landscapes (Inter-term travel course)
GEOL 3100	Environmental Geology
PHYS 2610	Physics of Climate
Social Sciences & Korbel Electives (select at least one from this category)	
ANTH 2011	Religion, Environmentalism, and Politics
ANTH 2420	Science, Technology and Human Values
ANTH 3040	Anthropologies of Place
ANTH 3255	Ancient North America
ANTH 3310	Indigenous Environment
ANTH 3500	City and Society
ANTH 3510	The Ancient City
ANTH 3880	Culture, Ecology, Adaptation
ECON 2360	Economics, Ecology, and Social Welfare
ECON 2450	Race in the Economy
ECON 3590	Urban Economics
ECON 3970	Environmental Economics
ENVI 3000	Environmental Law
GEOG 2401	The Human Population
GEOG 2410	Economic Geography
GEOG 2430	World Cities
GEOG 2810	Geography of Latin America
GEOG 3310	Culture/Nature/Economics-Human Ecology
GEOG 3340	Geographies of Migration
GEOG 3400	Urban Landscapes
GEOG 3420	Urban and Regional Planning
GEOG 3425	Urban Sustainability
GEOG 3450	Transportation and Mobilities
GEOG 3440	Urban Transportation Planning
GEOG 3445	Sustainability and Transportation
GEOG 3750	Topics in Human-Environment Interactions
GEOG 3755	Geography of Health
GEOG 3825	Geographies of International Development in Africa
GEOG 3890	Ecological Economics
GEOG 3940	Urban Geography Seminar
INTS 2275	Climate Breakdown
INTS 3530	Feeding the World: Global Food Security and Food System Sustainability
INTS 2380	Comparative Development Strategies
INTS 2490	Introduction to Global Health
INTS 3421	Environmental Justice Policy and Practice
INTS 3630	Global Environment
INTS 3715	The Politics and Policy of Sustainable Energy

LGST 3701	Topics in Legal Studies (Business & Sustainability) ¹	
PLSC 2840	International Law & Human Rights	
Arts & Humanities Electives (select at least one from this category)		
ARTH 3813	Arts of the American West	
ARTH 3867	The Circle and the Four Corners: Native North American Art	
EDPX 3200	Data Visualization	
EDPX 3340	Designing Social Good	
EDPX 3350	Sustainable Design	
EDPX 3370	Biomedica in Emergent Digital Practices	
ENGL 2715	Native American Literature	
ENGL 3706	Writing the American West	
HIST 2531	Twentieth Century Native American History	
HIST 2551	The American West Since 1860	
HIST 2710	From Sea to Shining Sea: Nature in American History to 1900	
HIST 2720	Paved Paradise? Nature and History in Modern America	
HIST 2702	Topics in History	
HIST 3650	Native Crude: Indigenous Oil Politics and Activism	
HIST 3680	The Strange History of American Suburbia	
PHIL 2180	Ethics	
PHIL 2200	Social & Political Philosophy	
PHIL 2785	Environmental Ethics	
PHIL 3011	Great Thinkers: Virginia Woolf	
RLGS 2011	Religion, Environmentalism, and Politics	
Additional elective credits may come from any lens category or other approved electives.		0-4
Other Approved Courses + Internships ²		0-4
LDRS 2400	Leadership and Sustainability in Belize (Inter-term travel course)	
MGMT 3100	Business Ethics and Social Responsibility	
SJUS 2010	Social Justice: Exploring Oppression ^(LLC; restricted)	
Capstone Seminar		
GEOG 2550: Current Issues in Sustainability (topics vary by instructor)		
Total Credits		24

¹ Topics courses must have Sustainability Attribute.

² Additional courses including topics courses, study abroad courses, independent studies, and internships may be approved for elective credit on a case by case basis by the Sustainability Minor Advisor.

ANTH 2011 Religion, Environmentalism, and Politics (4 Credits)

How does religion mediate the relationship between people and the natural world? How do different religious traditions understand and interpret the natural world and humans' responsibility to and for it? Is it possible to reconcile an understanding of the world as divinely created with human destruction of the environment—and, if not, then what are the political consequences? In this course, we will consider a variety of disciplinary approaches to topics related to religion, environmentalism, and politics, taking Abrahamic and indigenous religions as our key examples. From urban gardening to green Islam to Standing Rock to eco-feminism, we'll use theories about religion and culture to understand the complex intersections of faith, policy, and planetary crisis. The course includes a community engagement component that will bring us to a local faith-based urban farm where we will discuss course texts as we help prepare for the 2020 growing season. Cross-listed with JUST 2011 and RLGS 2011.

ANTH 3040 Anthropologies of Place (4 Credits)

This class is an exploration of the relationship between people and places from an anthropological viewpoint. We concern ourselves with a variety of ideas about place, emphasizing not just how places are used, but how they infuse themselves into the lives, histories and ethics of those who interact with them. The course readings include book-length anthropological case studies interspersed with interdisciplinary readings about place and landscape. The course includes seminar-style discussions of readings, workshops and observations in the field. On several occasions, we take our class on the road, working together to think about how people and place interact. By the end of the class, each student creates his or her own anthropology of a place. Must be junior standing or above.

ANTH 3310 Indigenous Environment (4 Credits)

The purpose of this course is to introduce students to particular environmental issues that affect indigenous peoples, including subsistence and economic issues; sacred lands; cultural property dilemmas; and the impact that use of traditional cultural properties by others—including nation-state governments, corporations and tourists—have on indigenous peoples' cultural and social integrity. Particular focus is on one of these issues—travel and particularly "ecotravel" and "ecotourism."

ANTH 3500 City and Society (4 Credits)

Examines the recent past and future of the city as a human built environment that reflects and reproduces social, political, economic, and cultural forces and ideals. Begins with the origin of 'modern' cities in the 19th century and ends with contemporary urban landscapes. Analysis is focused on both the technologies (physical qualities) and aesthetics of urban form. Emphasis is on re-imagining urban design to meet the social equity, cultural diversity, and environmental sustainability challenges of 21st century city life.

ANTH 3880 Culture, Ecology, Adaptation (4 Credits)

This course is organized around these concepts: "ecology," "adaptation," "landscape," "technology," "artifact," and "architecture." The course focuses on defining and examining adaptation and the role of culture and technology in achieving adaptations, or in not achieving them. This focus will be especially pursued with respect to the concept of landscape—that is, culturally defined physical space—and the cultural artifacts that interpret and modify it in the course of human adaptation to its ecological components.

ASEM 2601 Urban Economic History Through Cinema (4 Credits)

We have recently passed the threshold where more than half of the population globally is living in urban areas. Perhaps more striking is that in 1850 only 3 cities (London, Beijing and Paris) had populations that exceeded a million people, while today there are over 300 such cities, with the largest city, Tokyo, having nearly 40 million inhabitants. Coincidentally, the growth in urban areas coincided with the emergence of cinema. In the popular imagination cities have been sites of both promise and terror and this has been well captured in movies since the early 20th century. This course will consider the economic cycle of cities from the early 20th century to the present as seen through film representations. While the films we will watch are works of art this is not a course on film appreciation. What we are interested in is how the emergence of large clusters of people living together in relatively small areas is being depicted over time. Furthermore, we want to understand how the economic arrangements that define these clusters, these cities, are documented and provide a new way of thinking about how humans decide to live and work in common spaces.

BIOL 2010 General Ecology (4 Credits)

Topics in ecosystems, population and community ecology, as well as behavioral ecology. This course counts toward the Scientific Inquiry: The Natural and Physical World requirement. Prerequisite: BIOL 1011 and BIOL 1010. Co-requisite: BIOL 2011.

BIOL 2055 Ways of Seeing and Sensing in Biological Systems at Kennedy Mountain Campus (4 Credits)

Ways of Seeing and Sensing represents a new collaboration between the departments of Biological Sciences, Physics & Astronomy, and Media, Film & Journalism Studies at DU's Kennedy Mountain Campus (KMC). As part of this course, students will collaborate as part of multidisciplinary teams; to compile and apply new content knowledge in biology/ecology, film-making, science communication and story-telling in a project-based curriculum unique to the KMC. The class is a place-based exercise revolving around the idea that what we know about our surroundings depends on how we "see" or "sense." We will examine various aspects of natural systems specific to the Kennedy Mountain Campus (KMC) using both micro and macro approaches to "seeing" through a variety of technologies, including microscopes, trail cameras, photo and video cameras, night vision glasses, and telescopes. To further develop the concept of "sensing," we will explore the soundscapes of the KMC as well as the ways plants and animals in this ecosystem sense their surroundings. We will also explore the KMC using human senses other than sight to navigate the nighttime environment. Students will work in teams of 3–4 to develop and produce documentary stories unique to the ecology and astronomy of the KMC. Students choosing to participate for credit in Biological Sciences will complete additional reading and assignments focusing on the various ways that biological systems (from cells, to organisms, to communities) sense and respond to changes in their environment, including light, heat, sound, chemical cues, and physical forces such as electricity and gravity. This course will meet together with PHYS 2050 and MFJS 2050 courses, which each have different prerequisites and discipline-specific assignments. Prerequisites: BIOL 1010 and BIOL 1011.

BIOL 2320 Andean Landscapes (4 Credits)

This course introduces students to the landscapes, biodiversity, societies, and human-environment interactions in the Andes of Peru through an intensive and immersive field study and travel experience. This field intensive class equals 4 academic credits and occurs during winter interterm. Over a period of 11 days we will visit the cities and surroundings of Lima, Arequipa, and Cusco, Peru where we will examine and compare geography, cultures, history, archaeology, ecology, biodiversity, and sustainability issues. The Andean environment offers unique challenges for environment and societies and by understanding the locations and patterns of human activity in the Andes, students can better appreciate the circumstances affecting individuals and countries other than our own. Through observations, lectures, discussions, readings, assignments and immersion, the course will stress the development of in situ critical thinking skills and the promotion of cultural diversity and global awareness. Prerequisite: BIOL 1011.

BIOL 2825 Biogeographies of Conservation in Serengeti & Zanzibar (4 Credits)

This course introduces students to the landscapes, biodiversity, societies, and human-environment interactions in mainland Tanzania and the island of Zanzibar through an intensive and immersive field study and travel experience. This field intensive class equals 4 academic credits. Over a period of 9 days we will visit the greater Serengeti ecosystem and Tanzania where we will examine and compare geography, cultures, history, archaeology, ecology, biodiversity, and sustainability issues. The environment in this part of East Africa offers unique challenges for wildlife and societies. By understanding the locations and patterns of human and animal activity there, students can better appreciate the circumstances affecting individuals and countries other than our own. Through observations, lectures, discussions, readings, assignments and immersion, the course will stress the development of in-situ critical thinking skills and the promotion of environmental sustainability, cultural diversity and global awareness. Fulfills biology, geography, environmental science, sustainability minor, and intercultural global studies minor requirements. This course counts as a category elective for the Ecology and Biodiversity major. Prerequisite: BIOL 1011.

BIOL 3035 Invasive Species Ecology (4 Credits)

This course investigates those plants and animal species that have dramatically expanded their ranges and cause ecological harm. Topics covered include the mechanisms of ecological impacts across the globe, how invasive species are used to test basic ecological theory, the application of this research for managing real species, and related issues such as the debate within the scientific community about the term "invasive." We use a case-study approach, and students have the opportunity to go into the field as a class to observe the real invasions and learn sampling methods.

BIOL 3044 Coral Reef Ecology (3 Credits)

Ecology of coral reefs; organization and distribution of reefs; review of reef organisms and their interactions with each other and their physical environment; threats to coral reef conservation. This course counts as a category elective for Ecology and Biodiversity majors. Prerequisite: (BIOL 2010 or BIOL 2050) OR (GEOG 1201, GEOG 1202, and GEOG 1203).

BIOL 3055 Ecology of the Rockies (4 Credits)

A week in residence at the Mt. Evans Field Station prior to the start of fall quarter includes field projects dealing with ecology and environmental issues. On campus classes involve data analysis and interpretation and formal scientific communication. Themes include terrestrial and aquatic ecosystems, taxonomic groups ranging from conifer stands to aquatic insects and mountain goats. Lab fee associated with this course. Prerequisite: BIOL 2010 or permission of instructor.

BIOL 3070 Ecological Field Methods (4 Credits)

Series of field exercises for students to learn principles and procedures of field methodology, data analysis and technical writing in ecology; problems drawn from population, community and ecosystem ecology. Lab fee associated with this course. Prerequisite: BIOL 2010.

BIOL 3095 Global Change Ecology (4 Credits)

Over the past century, the mean surface temperature of our planet has increased slightly less than 1°C. While this may seem like a small increment, this change is already profoundly affecting Earth's organisms and ecological communities, and predictions for the impacts of continued change range from severe to catastrophic. Humans are also changing the environment through alteration of nutrient and water regimes. Topics include cause of climate change, comparison to past climatic change, human contribution to change and effect on organisms, communities and ecosystems. Prerequisites: BIOL 1010, BIOL 1011, AND BIOL 2010. Recommended Prerequisites/Corequisite: BIOL 2090.

BIOL 3350 Conservation Biology (5 Credits)

Conservation Biology is the study of documenting the earth's biodiversity, its threats, and how it may be protected. It is a multidisciplinary science within ecology with contributions from environmental chemistry, geography, sociology, and political science, among other fields. In this class students learn the language of conservation biology, the methods used by conservation biologists, and the nuances of current issues. In class, material is learned through both lecture and interactive exercises in the classroom portion, with hands-on practice in techniques and applications during the lab. Lab fee associated with this course. Prerequisite: BIOL 2010.

BUS 3355 Sustainability and Markets in Outdoor Recreation Industry (4 Credits)

This course provides an overview of environmental and social sustainability issues through a business lens, and shares insights on sustainability risks, strategy, and markets for enterprises in the outdoor industry. These issues are important for leaders in the outdoor recreation industry because a high percentage of their current and future customers care about sustainable business practices and environmental stewardship. We will review sustainability issues, emerging trends, regulatory changes, and innovative practices in the outdoor industry to integrate sustainability into enterprise risk management, operations, and strategy. Students will gain an overview of the main issues and challenges in sustainability, explore priorities and strategies being used in the outdoor industry, and learn frameworks and tools to help lead organizational change. We will review sustainability trends, material ESG risks, approaches to carbon and natural resource management, and how good data and information can improve sustainability management, collaboration, and communication. Organizations are increasingly focused on creating sustainable and inclusive growth that builds competitive advantage by providing value to customers, adapting to climate-related risks, and addressing community and social challenges in a sustainable way.

BUS 4355 Sustainability and Markets in the Outdoor Recreation Industry (4 Credits)

This course provides an overview of sustainability issues through a business lens, and shares insights on corporate sustainability risks, strategies, and market-based drivers of change. This sprint will review sustainability business risks and opportunities, ESG reporting frameworks, and how integrating sustainability into strategy can create enterprise value. As part of the Outdoor Industry Leadership program, students will gain an overview of the theory, practice, and challenges of corporate sustainability, learn strategies and tools to lead organizational change. The course will deepen student understanding of sustainability trends, perceived ESG risks, approaches to carbon management, and how ESG reporting frameworks can improve sustainability management, collaboration, and communication. Corporations will increasingly focus on creating sustainable and inclusive growth that adapts to climate-related risks, competes effectively for limited resources, and addresses community and social challenges in a sustainable way.

CHEM 2240 Introduction to Environmental Chemistry (4 Credits)

An introduction to the chemistry of the environment. Topics cover the chemistry of air, water, and soil with a special focus on the influence that humankind has on the natural environment. Course provides tools to understand environmental science from a chemical perspective. The course is a combined lecture and laboratory. Primarily for environmental science majors. Lab fee associated with this course. This course counts toward the Scientific Inquiry: The Natural and Physical World requirement. Prerequisites: CHEM 1010, CHEM 1020, CHEM 1040, and CHEM 1250.

CHEM 3410 Atmospheric Chemistry (3 Credits)

The concepts of equilibrium thermodynamics, kinetics, and photochemistry will be applied to understanding atmospheric processes. Covers urban air pollution in detail with focus on primary pollutants. Also covers stratospheric chemistry with focus on ozone chemistry and the chemistry of climate change. Prerequisites: (CHEM 2270 and CHEM 2453) OR CHEM 2240.

CHEM 3411 Aquatic Chemistry (3 Credits)

The circulation of the oceans and their chemical make-up. 'Classical water pollution problems' like biological oxygen demand and turbidity are discussed. Also presented: aquifer structure and flow, ground water chemistry, pollutant partitioning between stationary and mobile phases, heterogeneous surface chemistry, and the detection of trace contaminants. Prerequisites: (CHEM 2270 and CHEM 2453) or CHEM 2240.

CHEM 3412 Environmental Chemistry & Toxicology (3 Credits)

A survey of environmental toxicology concepts: animal testing, dose-response data, epidemiology, risk assessment. The course includes ecotoxicology, focusing on the alteration of biological and chemical systems beyond the simple response of an individual to an environmental chemical. Prerequisites: CHEM 2270 and CHEM 2453.

COMN 3701 Topics in Communication (1-4 Credits)**EALC 2001 ESLLC: Local and Regional Environmental Issues (1,2 Credit)**

This course introduces students to Denver and the Front Range region as we investigate the current environmental issues this region faces today. We explore Denver's environmental framework through visits to environmental non-profits and sustainable business, as well as by engaging in collaborative sustainability initiatives on our campus. Excursions to places such as Old South Pearl Street and historic Lower Downtown allow us to trace Denver's past through geological and historical lenses. Restricted to Environmental Sustainability LLC students.

EALC 2002 ESLLC: The Impact of Development on the Environment (1,2 Credit)

This course takes a detailed look at human/environmental interactions, with particular emphasis on the explosive population growth and pressures on the global water supply. We discuss the demand on water globally and locally to further demonstrate the impacts of development. Restricted to Environmental Sustainability LLC students.

EALC 2003 ESLLC: Energy in American Society (1,2 Credit)

This course examines key issues surrounding energy in American society. Using Colorado's environment as a backdrop, students learn about the different types of conventional, alternative and renewable energy as well as the associated benefits and risks that each option presents. We explore these associated benefits and risks from the raw materials used to create energy all the way to the outputs of energy consumption. Restricted to Environmental Sustainability LLC students.

ECON 2360 Economics, Ecology, and Social Welfare (4 Credits)

This course examines the interaction between economic outcomes, environmental effects, and inequality based on the contribution of alternative economic perspectives. It is divided in three core sections: Section I presents a historical examination of the restructuring of global capitalism under neoliberalism, and its impact on resource distribution and ecosystems. It follows a presentation of the theoretical differences between traditional and critical economics in the interpretation of these developments. Section II applies the concepts learned in Section I to specific case studies. For each of these case studies, the analysis will highlight both social and environmental implications and prospects for ecological sustainability and social welfare. Section III discusses alternative economic recommendations for socio-economic prosperity and ecological conservation. Prerequisite: ECON 1030.

ECON 2540 Law and Economics (4 Credits)

This course provides an introduction to the study of law and economics, the objective being to provide a critical examination of the nexus between economics and law. After establishing foundational concepts and definitions the course turns to an investigation of legal history, traditions and movements. For example, this will include examination of common law and civil law (code), the progressive era, legal realism, critical legal studies, the law and economics movement, critical race theory, and law and neoliberalism. An assessment of distinct approaches to law and economics from different economic perspectives will also be undertaken. The latter half of the course covers the economic dimensions to various sources or core areas of law including property, contract, tort, administrative, criminal and constitutional law. Additionally, certain special topics will be introduced and analyzed throughout the course, including the social and legal construction of markets; public finance and the economic role of government; the legal foundations of money; and, environmental, international, family, public, corporate, competition and antitrust law. The course also offers exposure to hands-on and practical factors concerning the profession and practice of law including legal terminology, precedent, reasoning, case review, writing and procedure.

ECON 3970 Environmental Economics (4 Credits)

This course examines economic perspectives of environmental and resource problems, ranging from peak oil, food crisis, and climate change. Topics include the property-rights basis of polluting problems, environmental ethics, benefit-cost analysis, regulatory policy, incentive-based regulation, clean technology, population growth and consumption, and sustainable development. Restriction: junior standing. Prerequisite: ECON 2020.

EDPX 3350 Sustainable Design (4 Credits)

This course surveys and functionally implements the foundations of sustainable design strategies as a praxis intersecting the domains of digital media design, dissemination, community organization and networking. The course builds upon the basic paradigms that have coalesced in the organizational and critical platforms of the sustainable design movement including ecology/environment, economy/employment, equity/equality and education/pedagogy/dissemination. The class reviews a wide spectrum of sustainable design strategies including: mapping of consumptive origin-thru-fate, green materials usage, creative commons, open source software/hardware movements, collaborative design, predictive complexity modeling, biomimicry, evolutionary design methods, and greening infrastructure among others. Lab fee. Prerequisites: EDPX 2300 and EDPX 2400 or permission of instructor.

EDPX 3700 Topics in Emergent Digital Culture (4 Credits)

This course provides an in-depth exploration of the emergent digital practice of a particular culture and a unique area of advanced study (for example, art and science studies; activism; youth culture; critical game studies; the philosophy of technology; or social networking). Students learn the social/historical context of the particular culture and observe and document the interplay between cultural practices and particular technologies. This course may be repeated. Prerequisite: varies with topic.

ENGL 2715 Native American Literature (4 Credits)

Native American Literature explores the relationships between contemporary Native American narratives and Native American oral traditions. We will examine the intellectual underpinnings of Native American literary expressions, focusing on tribally specific Native American concepts of language, perception, and process in relation to Native cultural and political survival. This course aims to celebrate Native American cultural expression through lectures and discussion, group work and intellectual exercises.

ENGL 3706 Writing the American West (4 Credits)

Explores historical and contemporary writing produced in and about the American West.

ENVI 3000 Environmental Law (4 Credits)

Purpose and applications of federal laws pertaining to environmental protection, including NEPA, RCRA, CERCLA, and Clean Water and Clean Air Acts; addresses role of states in implementation of federal environmental laws.

EPM 4510 Environmental, and Health & Safety Management (4 Credits)

This course presents the intricacies of establishing environmental and health and safety programs in the workplace. The course is divided into specific environmental and health and safety topics that are relevant to environmental and safety management. There are multiple topics that address the benefits and barriers to designing, implementing, and maintaining environmental and health and safety programs.

GEOG 2320 Andean Landscapes (4 Credits)

This class introduces students to intensive field activities pertinent to the study of Andean individuals and societies. Students study the characteristics of people, activities, as well as landscapes across the locations of Lima, Cusco and Puno in Peru. This course focuses on geography, history, archaeology, anthropology, biology, ecology and sustainability issues surrounding the above mentioned destinations. This course involves moderate physical activity (Inca Trail hike).

GEOG 2401 The Human Population (4 Credits)

This course covers the fundamental concepts of demography with an emphasis on its relevance to inquiry in disciplines including economics, business, geography, environmental science, political science and sociology. This course includes computer laboratory work involving the exploration and analysis of census data using geographic information systems. This course counts toward the Scientific Inquiry: Society and Culture requirement.

GEOG 2410 Economic Geography (4 Credits)

Economic elements as spatially arranged, distribution of economic activities on the Earth's surface; market, resource and transportation factors in location theory.

GEOG 2430 World Cities (4 Credits)

The study of world cities from a geographical perspective emphasizes the following general topics: 1) worldwide urbanization and globalization processes; 2) the study of cities as nodes within global, regional, and national urban systems; 3) the internal spatial structure of land uses within cities; 4) the spatial dimensions of economic, social, political, and cultural processes in cities; and 5) environmental elements, involving human interrelationships with the natural environment in an urban setting. Urban patterns and processes are examined in each of the world's major regions, including in-depth analysis of focus case study cities.

GEOG 2500 Sustainability & Human Society (4 Credits)

Sustainability has become a catch phrase in discussions concerning the long-term viability of a number of phenomena, from the environment to the economy. Sustainability is commonly defined as meeting the needs of the current generation without compromising the ability of future generations to meet their needs. Students are introduced to issues inherent in discussions of sustainability. The major areas of focus include definitions of ecological and environmental sustainability, economic and political sustainability, and social justice, and various metrics used to assess sustainable behavior and practices. Students study the theory, principles and practices of sustainability, and participate in discussion and writing exercises based on lecture and readings.

GEOG 2511 Principles of Sustainability - Honors (4 Credits)

Principles of Sustainability introduces students to fundamental issues and concepts of Sustainability. This topic concerns the long-term viability of a number of phenomena, from the environment to the economy. Sustainability is commonly defined as meeting the needs of the current generation without compromising the ability of future generations to meet their needs. Students will be introduced to issues inherent in discussions of sustainability. The major areas of focus include definitions of ecological and environmental sustainability, economic and political sustainability, social justice, and various metrics used to assess sustainable behavior and practices. Students will study the theory, principles and practices of sustainability, and participate in discussion and writing exercises based on lecture and readings. This course counts toward the Scientific Inquiry: Society and Culture requirement. Enrollment restricted to students in the Honors Program.

GEOG 2550 Issues in Sustainability (4 Credits)

The capstone seminar focuses on a particular problem related to sustainability. Seminar topics vary by instructor, but include a combination of readings, discussion, guest speakers, a group project (either service learning or research), and individual research presentations. Prerequisite: GEOG 2500 and completion of all other requirements for the sustainability minor.

GEOG 2700 Contemporary Environmental Issues (4 Credits)

Principles, practices, issues, and status of care of environment; lectures, readings, and discussions focus on causes, effects, and mitigation of a selection of topical regional, national, and international environmental problems including Denver's air pollution, acid deposition, hazardous waste management, global warming, and tropical deforestation.

GEOG 2730 Geography of Surfing (4 Credits)

Surfing is often viewed simply as a recreational sport. But it is also so, so, much more. It is a multi-billion dollar global industry, a reflection of global climate patterns interacting with sedimentation regimes and the land, a globalizing culture diffusing from strong regional identities, and a reason to travel to exotic locations and explore the planet. This course uses geographic perspectives to study the many facets of the sport. Geography provides a perfect set of tools to study surfing ranging from the propagation of swells to the diffusion of culture. The goal of the course is to introduce students to the core analytical approaches used in Geography as well as for students to understand that surfing is much more than a recreational sport.

GEOG 2815 Geographies of Conquest: Christian, Jewish, and Islamic Societies in Andalusia (4 Credits)

This course introduces students to the cultural landscapes, former and current, of the different societies that converged in Iberia. The class will focus on medieval Al-Andalus, the Islamic kingdoms that flourished there. During medieval times, Christian, Islamic, and Jewish societies lived side by side in an environment that oscillated between tolerance and open persecution. Science, art, scholarship, and political strategy motivated tolerance while religious fundamentalism and geopolitical considerations motivated persecution. This class will cover the human-environment interactions in the landscapes of Andalusia through an immersive field study and travel experience. This field class equals 4 academic credits. Over a period of 8 days we will visit the cities and surroundings of Madrid, Cordoba, Seville, and Granada in Spain where we will examine and compare cultural geography (past and present), history, and anthropological issues surrounding the communities that interacted in Al-Andalu.

GEOG 2835 Biogeographies of Conservation: Safari landscapes and protected areas (Tanzania) (4 Credits)

This course introduces students to the landscapes, biodiversity, societies, and human-environment interactions in Tanzania mainland through an intensive and immersive field study and travel experience. This field intensive class equals 4 academic credits. Over a period of 9 days we will visit the greater Serengeti ecosystem, Tanzania where we will examine and compare geography, cultures, history, archaeology, ecology, biodiversity, and sustainability issues. The environment in this part of East Africa offers unique challenges for wildlife and societies. By understanding the locations and patterns of human and animal activity there, students can better appreciate the circumstances affecting individuals and countries other than our own. Through observations, lectures, discussions, readings, assignments and immersion, the course will stress the development of in-situ critical thinking skills and the promotion of environmental sustainability, cultural diversity, and global awareness.

GEOG 3100 Geospatial Data (4 Credits)

This graduate-level course is designed to provide graduate students from a broad range of disciplines with the skills to carry out applied research tasks and projects requiring the integration of geographic information system technologies and geospatial data. Students are introduced to a collection of techniques and data sources with a focus on acquiring and integrating data. Legal, ethical, and institutional problems related to data acquisition for geospatial information systems are also discussed.

GEOG 3120 Environmental/GIS Modeling (4 Credits)

Facing challenges brought by the dramatically changing global environment, environmental modeling is increasingly used to support geographical and environmental decision making (e.g., spatial conservation prioritization). Environmental modeling is concerned with the characterization, modeling and simulation of environmental phenomena and processes using conceptual and mathematical models. Environmental phenomena and processes taking place in the geographic space are regulated by spatial principles. They also interact with other phenomena or processes in the attribute space. For example, species distribution is not only constrained by spatial factors such as proximity to other species, but also influenced by environmental factors such as terrain and climatic conditions. Due to its superior capabilities of handling spatial data and modeling spatial and attribute relationships, geographic information system (GIS) provides the ideal tools for environmental modeling. This upper-level undergraduate/graduate-level course surveys the concepts and techniques of GIS supported environmental modeling in three general categories: 1) Modeling in the spatial domain where the focus is on modeling spatial principles (e.g., spatial autocorrelation); 2) Modeling in the attribute domain where the emphasis is on environmental correlations (e.g., environmental niche modeling); 3) Modeling in the combined spatial and attribute domain where both spatial principles and environmental correlations are exploited (e.g., geographically weighted regression). Throughout this course, several real-world applications are used to demonstrate the ideas, concepts, and techniques of GIS supported environmental modeling, including crime spatial pattern modeling, species distribution modeling, and soil-landscape modeling and mapping. Prerequisites: GEOG 2000 and GEOG 2100.

GEOG 3310 Culture/Nature/Economics-Human Ecology (4 Credits)

Cultural adaptation, livelihood strategies and environmental modification among subsistence and peasant societies: responses of such groups to technological change and economic integration.

GEOG 3340 Geographies of Migration (4 Credits)

This course explores contemporary movement of people across international borders and the social, cultural, political, economic, and environmental repercussions of such movements. The class looks at the global flow of people across national boundaries and the ways in which these dispersed peoples build and maintain social networks across national borders. While doing so, we address the role of globalization in international migration processes. What motivates people to move long distances, often across several international borders and at considerable financial and psychological cost? How do migrants change—and how in turn do they bring change, social as well as economic, to new destinations as well as places left behind? This course examines politics and patterns of migration, transnational migration, and immigration to the United States.

GEOG 3400 Urban Landscapes (4 Credits)

Urbanization as a process; national urban systems; internal spatial structure of cities; role of transportation in urban development; location of residential, commercial and industrial activities; agglomeration economies; residential congregation and segregation; environmental justice; urban growth and growth coalitions; decentralization and urban sprawl; edge cities; impacts on the urban environment; world cities; globalization.

GEOG 3420 Urban and Regional Planning (4 Credits)

Historical evolution of planning theory and practices; comprehensive planning process; legal, political, economic, social, environmental aspects of urban planning; urban design; urban renewal and community development; transportation planning; economic development planning; growth management; environmental and energy planning; planning for metropolitan regions; national planning.

GEOG 3425 Urban Sustainability (4 Credits)

The 21st century is being called the 'century of the city.' Now more than ever, humans across the globe call the city their home. Many of the world's most pressing crises are manifest in cities, including: greenhouse gas emissions, land degradation, high mass production and consumption, widespread poverty and hunger, and expanding socio-economic disparities. As 'sustainability' becomes part of mainstream discourse, this course explores what sustainability means for urban contexts around the globe. Arguably, the city has the potential to be the most efficient, equitable, and environmental form of modern human settlement. Covering all dimensions of sustainability from a social science perspective, this course focuses on theoretical groundings, practices of urban sustainability, and new research agendas. Major topics include cities and nature; planning and land use; urban form; community and neighborhoods; transportation systems and accessibility; livelihood and urban economies; and social justice and the city.

GEOG 3440 Urban Transportation Planning (4 Credits)

A specialized course in the urban planning sequence focusing on issues, practices and policies of urban transportation planning. Recommended for anyone interested in timely transportation topics, such as the feasibility and impacts of light rail transit, the planning and implementation of highway projects, and the role of freight and passenger transportation companies in transportation planning.

GEOG 3445 Sustainability and Transportation (4 Credits)

Sustainable transportation aims at promoting better and healthier ways of meeting individual and community needs while reducing the social and environmental impacts of current mobility practices. Given the importance of transport for economic growth, the uncertainties surrounding the availability and price of future sources of energy for transport use, as well as the social and environmental externalities of currently-utilized transport modes, it is imperative that more sustainable ways of providing transportation be developed and utilized.

GEOG 3610 Climatology (4 Credits)

Climatology is the study of the processes that result in spatial and temporal variation of weather. This course introduces the student to the processes responsible for the transfer of matter and energy between the Earth's surface and the atmosphere and the average weather conditions that result. In addition, topics of global concern, such as greenhouse effect, El Nino, urban heat islands and acid rain, are discussed. Laboratory exercises provide an opportunity to investigate climate variation and climatic change through the use of a variety of computer simulations. Prerequisites: GEOG 1201, GEOG 1216, & GEOG 1264.

GEOG 3640 Climate Change and Society (4 Credits)

The science of anthropogenic climate change will be presented with an emphasis on critical evaluation of the evidence of climate change and future scenarios and migration strategies. Students will be introduced to the latest climate change research, including the Intergovernmental Panel on Climate Change report, and the most recent literature from the field. The societal and cultural implications of climate change will also be discussed. Prerequisites: GEOG 1201, GEOG 1216, or GEOG 1264.

GEOG 3720 Mountain Environments and Sustainability (4 Credits)

Mountain Environments and Sustainability explores the unique physical and cultural aspects of high relief and/or high altitude environments. Covering one quarter of the Earth's land surface, mountains directly or indirectly impact the lives of millions of people. We examine the significance of mountains to climate, water resources, and human activities, and discuss the sustainability of these environments and communities in light of rapid changes in many mountain regions resulting from anthropogenic factors and global change. GEOG 1201, 1202, and 1203 or instructor approval.

GEOG 3750 Topics in Human-Environment Interactions (1-4 Credits)

This course investigates various aspects of the relationships between human societies and the natural environment.

GEOG 3755 Geography of Health (4 Credits)

The geography of health is a thriving area of study that considers the impact of natural, built, and social environments on human health. This course introduces students to three geographical contributions to health studies. First, it emphasizes the importance of ecological approaches to health, which consider interactions between humans and their environments, including topics such as how climate change might influence disease distributions, and how the built environment can influence patterns of physical activity. A second focus is social theory, exploring how aspects such as race, socioeconomic status, and identity play a critical role in influencing human health. A third section of the course considers how spatial methods (cartography, GIS, and spacial statistics) can help answer health-related questions.

GEOG 3800 Geography of Colorado (4 Credits)

This course focuses on the physical and human geography of Colorado, a state that includes the western Great Plains, the southern Rocky Mountains, and the eastern Colorado Plateau. Colorado's varied natural landscapes provide equally varied settings for human settlement and resource use. Recommended Prerequisites: GEOG 1201, GEOG 1202, and GEOG 1203.

GEOG 3825 Geographies of International Development in Africa (4 Credits)

What are the historical roots of (under)development in sub-Saharan Africa? How is sub-Saharan Africa typically depicted in the media? How can we explain the fact that the Niger Delta provides the bulk of Nigeria's revenue, and yet, it remains the poorest part of the country? Is climate change the major cause of persistent food insecurity in the drylands of Ethiopia and Burkina Faso? How can we make sense of the uneven geography of poverty in Ghana? What explains urban food insecurity in Cape Town, or land struggles in rural South Africa? What are the social processes underlying the spatial disparity in health status in Malawi, or gender differences in HIV rates in Nyanza province, Kenya? And why do land users often resist state conservation efforts in Tanzania? These are some of the critical questions explored in this course. The primary aim is to provide a critical introduction to the geography of sub-Saharan Africa. We will begin by exploring how "the Africa story" is told by the media, scholars and policymakers. Attention will then shift to understanding the key historical processes that shape (under)development in the region. We will cover a broad range of topics, including governance, colonial history, debt and structural adjustment, foreign aid, food and agriculture, gender, climate change, land grabbing, health, population growth, migration, remittances, and resource extraction. We cannot possibly cover all these topics in greater detail; indeed, some are too vast and complex. We will however use specific case studies to illustrate and discuss each of the topics.

GEOG 3835 Sustainability in South Florida: The Everglades and Florida Keys (4 Credits)

South Florida represents a unique region in the United States and faces the challenge of trying to balance a tourist economy with protection of natural landscapes and resources. The region's significant sustainability challenges include: climate change (particularly sea level rise), invasive species, fisheries management, and landscape protection. This class uses a field-based case study approach to unpick some of these complex issues as we visit local sites and explore topics such as protecting native species, sustainable resource use, and ecotourism.

GEOG 3870 Water Resources & Sustainability (4 Credits)

In this course, we look at water as both a local and global resource and examine what sustainability means for human and ecological realms. After an overview of the physical processes that drive the hydrologic cycle, surface and groundwater hydrology, we examine how we humans have harnessed water for our use and how we both alter and treat its quality. We examine the legal aspects of water allocation in the U.S. and the groups and agencies that are most involved in managing and overseeing water issues. Finally, we examine the most pressing water "issues" related to wildlife, development, scarcity and conflict. We look forward to imagining the power of both the individual and the collective in meeting our future, global water needs.

GEOG 3890 Ecological Economics (4 Credits)

Ecological Economics is an emerging transdisciplinary endeavor that reintegrates the natural and social sciences toward the goal of developing a united understanding of natural and human-dominated ecosystems and designing a sustainable and desirable future for humans on a materially finite planet. In this course we start with a basic overview and summary of the neo-classical economic perspective with a particular focus on the recognized market failures of public goods, common property, and externalities. We begin with a reconceptualization of economic theory by imposing scientific constraints (e.g. conservation of mass and energy, the laws of thermodynamics, evolutionary theory, etc.). Using the ideas developed in this reconceptualization of economic theory we explore the implications for international trade and myriad public policies associated with the ethical, environmental, and economic aspects of sustainability.

GEOG 4445 Sustainability and Transportation (4 Credits)

Sustainable transportation aims at promoting better and healthier ways of meeting individual and community needs while reducing the social and environmental impacts of current and future mobility practices. Given the importance of transport for economic growth, the uncertainties surrounding the availability and price of future sources of energy for transport use, as well as the social and environmental externalities of currently-utilized transport modes, it is imperative that more sustainable ways of providing transportation be developed and utilized.

GEOG 4835 Biogeographies of Conservation: Safari landscapes and protected areas (Tanzania) (4 Credits)

This course introduces students to the landscapes, biodiversity, societies, and human-environment interactions in Tanzania mainland through an intensive and immersive field study and travel experience. This field intensive class equals 4 academic credits. Over a period of 9 days we will visit the greater Serengeti ecosystem, Tanzania where we will examine and compare geography, cultures, history, archaeology, ecology, biodiversity, and sustainability issues. The environment in this part of East Africa offers unique challenges for wildlife and societies. By understanding the locations and patterns of human and animal activity there, students can better appreciate the circumstances affecting individuals and countries other than our own. Through observations, lectures, discussions, readings, assignments and immersion, the course will stress the development of in-situ critical thinking skills and the promotion of environmental sustainability, cultural diversity, and global awareness.

GEOG 4930 Nicaragua: Development Dilemmas (4 Credits)

This class takes students to post-revolutionary Nicaragua to examine the consequences of recent land grabs by foreigners and transnational companies. Students learn to operate in a country with minimal "western" infrastructure. They learn to examine developing landscapes (that is, resorts and tourism infrastructure) with new eyes and from the perspective of locals who have been left out of the development loop. By the end of the class, students begin to understand the "development game", begin to question the role of tourism in developing economies, begin to know how to interact with other cultures, and finally learn to question the landscapes we "see" and begin to peel back the layers to understand the social and physical evolution of the landscape before their eyes. This class takes an experiential approach and requires students to participate in a service learning experience. Service learning is defined as a course-based, credit bearing educational experience in which faculty, students, and community members participate in an organized service activity that addresses a self-identified community need. We work with several community-based and non-governmental organizations to ensure a good fit between community needs and student expertise.

HIST 2710 From Sea to Shining Sea: Nature in American History to 1900 (4 Credits)

In ways often hidden or ill understood, natural and environmental factors powerfully shaped the history of America from colonial times to the nineteenth century. In this course, we consider how natural resources like fish and forests became the basis for European empire-building; how colonists, Indians, slaves, settlers, and industrialists all acted to transform the landscapes and ecosystems of North America; and how ideas about nature helped mold the market economy and an emerging sense of American national identity. This course counts toward the Analytical Inquiry: Society and Culture requirement.

HIST 2720 Paved Paradise? Nature and History in Modern America (4 Credits)

Oil drilling and outdoor recreation, "medical miracles" and natural disasters, the making of national parks and suburban landscapes, and political battles over pollution, property rights, energy, wilderness, endangered species, and toxic waste all belong to the environmental history of the recent U.S. In this class we explore that history, weighing how Americans from the late nineteenth century to the present day have thought about nature, modified and made use of it, and competed for control of resources and land.

HIST 3455 Living Dangerously: Hazards and Disasters in American History (4 Credits)

Monster storms, deadly pandemics, climatic doomsday scenarios, tragic accidents like the Titanic: our news, popular culture, and national nightmares are filled with imagery of disasters. They make for upsetting and almost irresistibly gripping stories, but the stories too often fall into cheap sensationalism, simplistic morality tales, and other clichés. In this seminar, sweeping from pre-Columbian calamities to Hurricane Katrina, covid, and the climate disasters of our own time, we'll move past the clichés to consider the historical significance of disasters in America: how they've disrupted people's lives, but also reshaped ideas of what's "natural" or "normal." We'll ask: what roles have humans played in "natural" disasters like floods, droughts, wildfires, and earthquakes? How have Americans tried to guard against environmental hazards, and what unintended consequences—including new kinds of disasters—have resulted from these efforts? We'll also study why some people are more vulnerable than others, and how environmental hazards and disasters have helped shape social inequality. Disaster history not only sheds new light on America's past, but also intertwines it with environmental questions that are literally matters of life and death—so the class welcomes students of history, environmental studies, sustainability, politics and public policy, geography, and other fields too.

INTS 2275 Introduction to the Environmental Crisis (4 Credits)

We live in a time when the planet is undergoing great stress and strain. Multiple global environmental problems are pushing us to the precipice, but few people address the scope and scale of the problem. Clearly, the planet is undergoing powerful changes, much of it due to human activity. Indeed, this is exactly what we mean when we say we are now living in the Anthropocene epoch, where human activity has significantly altered the Earth. However, as complex the problems facing humanity are, a very simple question arises: Will humanity have enough time to turn away from going over the cliff and become sustainable? Although it is impossible to answer that question with any certainty, we have a much better chance of discovering an answer by realizing two basic components of the problem: 1) planetary stability, and 2) the planet as a system. This class distills the complex relationship between human activities and planet stability by understanding what planetary boundaries are and what it means when we push past them.

INTS 2380 Comparative Development Strategies (4 Credits)

Why do people in some countries have so much, while people in other countries lack basic necessities? This course explores the field of development economics, exploring the challenges improving quality of life in poor countries. We look at national-level indicators and explore theories of aggregate economic growth. But we also zoom in on particularly pernicious challenges, including health, education, the environment, agricultural transitions, demographic shifts, and human mobility. Students are invited to act as development practitioners themselves, developing skills in data analysis as well as grant writing.

INTS 2490 Introduction to Global Health (4 Credits)

This class is an introduction to the field of global health and explores relationships between social, political, cultural, and economic conditions of mostly low and middle-income countries and their impact on health and health services. We will spend some time covering health issues in high-income countries as well. A major focus of the course is the evolution of primary health care and alternative strategies in global health. Topics addressed include: maternal and child health, nutrition, the rise of non-communicable diseases, water and sanitation, community engagement, global health agencies, and funding sources. The course presents an overview of the multiple factors that influence global health and emphasizes the importance of a multidisciplinary approach to global health challenges.

INTS 3421 Environmental Justice and Policy (4 Credits)

Environmental justice (EJ) asks how we can ensure a fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the design, implementation, and enforcement of environmental laws, regulations, and policies. In short, how can we facilitate an environment where people live, work, and play exempt from unequitable allocations of environmental benefits (such as natural resource distributions) and harms (such as environmental health hazards). The course will present a historical overview of the EJ movement in the United States and its intersections with global EJ. It will cover the theoretical and practical methods used in environmental policy to assist government agencies, from the local to the global, in addressing immediate and long-term environmental justice challenges. Particular attention will be placed on the Colorado State legislature and how different environmental justice bills are designed and negotiated through the legislative session. Students will examine proposed bills and their relationships to social theories on EJ, diverse actors' interests and needs, and the appropriateness of the solutions presented to address specific environmental inequities. This will require group collaboration to examine specific EJ bills and produce in-class presentations and a policy brief that engages students critically with the course material and a real-world EJ issue. In short, with this course you will:

- Learn about the EJ movement history
- Create and share your own EJ story
- Explore issues in water access & air quality, food insecurity, access to nature and open spaces, and more
- Understand EJ policy in Colorado and beyond
- Analyze EJ policies in the Colorado State legislature

Prerequisites: INTS 1500 and INTS 1700.

INTS 3630 Global Environment (4 Credits)

The linkages between social change, economic change and alterations to ecosystems have been apparent, if not overtly acknowledged, throughout history. It was not until 1987, however, with the publication of *Our Common Future*, that such linkages were couched in terms of development and explicitly placed on the international development agenda. The idea appears simple—environmental change, patterns of social change and economic development, social and political factors operate together and impact local, national, regional and global ecosystems. But impacts of the change in any one sector are seldom confined within national boundaries. How then does one address environmental issues across different regulatory, political, institutional and geographic scales? This course examines the connectivity between diverse elements of our planet's ecosystem, explores how a change in one element can have immediate and long-term impacts across local and global territory, and looks at strategies to create greater harmony across environmental, social, political and economic interests. Prerequisites: INTS 1500 and INTS 1700.

LDRS 2400 Leadership and Sustainability in Belize (4 Credits)

Every day, decisions are made by leaders in business, government, and non-profit settings that impact sustainability in its many forms. This course explores multiple meanings and interpretations of sustainability. The course location of Belize provides a perfect learning laboratory to examine how one country is attempting to balance the sometimes competing demands of economic, cultural, and environmental sustainability. Course activities include staying at a low-environmental impact conference center in the rainforest, visiting a model environmentally sustainable island community, hearing guest lectures from various country experts, and exploring Mayan ruins. Through these activities students examine the role that leadership plays in contributing to small and large scale sustainability efforts. Students must apply and receive instructor permission to register for this course.

LGST 3450 Impact of Driverless Mobility: Business, Legal & Ethical Implications (4 Credits)

Smartphones and personal computers have changed the world and how we live in it. Now, Driverless Vehicles are poised to profoundly reshape our transportation systems, real estate development, access to goods and services, and our collective ecological footprint. In our "Impact of Driverless Mobility" course, we will consider many of the broad implications of this disruptive technology, including, but not limited to, the many legal, ethical and business considerations. Prerequisite: LGST 2000.

LGST 3701 Topics in Legal Studies (1-4 Credits)

Exploration of various topics and issues related to business ethics and legal studies. Prerequisites: LGST 2000.

MGMT 3100 Business Ethics and Social Responsibility (4 Credits)

This course introduces students to ethical concepts, theories and issues as they relate to business and managerial decision making, including the social responsibilities of business. Case studies, group projects and lecture format. Cross listed with LGST 3100. Prerequisites: MGMT 2100 and admission to Daniels.

PHIL 2180 Ethics (4 Credits)

Alternative theories of morals and values, ethical problems and solutions offered by classical and contemporary thinkers. This course counts toward the Analytical Inquiry: Society and Culture requirement.

PHIL 2200 Social & Political Philosophy (4 Credits)

Topics covered include the relation of the "social" to the "political," the nature and role of political ideology, issues in democracy and globalization. This course counts toward the Analytical Inquiry: Society and Culture requirement.

PHIL 2346 Philosophy of Nature (4 Credits)

This course will discuss the nature of nature, the ethics of nature, our knowledge of nature, the politics of nature, the history of the philosophy of nature, physics, and aesthetics. We will read, poetry, philosophy, and literature to pose and answer these questions.

PHIL 2785 Environmental Ethics (4 Credits)

A study of current issues and controversies regarding the natural environment from a variety of philosophical and ethical perspectives, including anthropological, animal rights, "land ethic," deep ecology, eco-feminism, and postmodern approaches.

PHIL 3011 Great Thinkers: Virginia Woolf (4 Credits)

In this course we will read Virginia Woolf as a philosopher. We will discuss her philosophy of nature, knowledge, art, politics, science, sensation, gender, and materialism throughout her fiction and non-fiction writings.

PHYS 2610 Physics of Climate (4 Credits)

The course will examine energy from the sun and how it flows into the land, atmosphere, and oceans and then out to space, and how that regulates the average temperature of Earth (and other planets). Emphasis will be placed on the carbon cycle of the Earth and related topics: atmospheric chemistry of greenhouse gases, forests and phytoplankton, weathering, glaciers, paleontological climate, and the formation of ancient hydrocarbons. Algebra will be used in the class. A 1000-level NSM course or permission of the instructor is required.

PHYS 3350 Physics and Information (4 Credits)

Students in Physical Sciences are often well versed in the art of model building but less so in the process of model-selection when multiple models can describe the same data. Students rarely learn tools beyond curve fitting and least square error minimization for model selection. Consequently, students are often unaware of the scope of different tools and fail to make judicious choice of algorithms/theories when faced with diverse problems. For example, building a model from data is very different from generating data (stochastic or deterministic) from a model. Next consider two contrasting challenges of model building i) when there is limited data vs ii) when there is too much data. For the first problem – inferring models from limited data – the solution can be traced back to Boltzmann's formulation of Statistical Physics describing motion of atoms. The connection between Information theory, Inference and Boltzmann's description, however, is often overlooked in introductory or even advanced classes in Physics, and Statistics. Studying these similarities can unlock novel solutions for problems well outside of thermodynamics, even as far as Image processing, Biology and Network science. Inference also requires us to appreciate fundamental topics in Probability – difference between frequentist and non-frequentist approach, Bayesian formalism – that are rarely taught to physical scientists, life scientists or engineers. At the other extreme, faced with data deluge, we routinely ask: how do we make sense of too much data? We use clustering, PCA, Neural Networks. In this course we will discuss and connect all these seemingly disparate concepts and apply them – at the appropriate context – to diverse problems in Physics, Chemistry, Biology and beyond. In the process we will gain an in-depth knowledge about commonly heard but perhaps less understood topics such as: Entropy, Likelihood maximization, Bayesian statistics, PCA, Classification algorithms, and Neural Networks. We will also address another often overlooked but fundamental and fascinating topic, biology's inherent ability to encode and decode information. Currently there is no such course that address all these topics in Information and Data Science in an unified manner – deeply connecting their formal basis, regime of applicability – grounded on physical principles, with a forward looking approach towards application in many areas well outside of traditional sciences. A lot of learning in the course will happen 'on the fly', where the tools and application problems are learnt as needed. Prerequisites: Calculus I, Calculus II, and at least two other courses focusing on application of mathematics to problems in physics/chemistry/biology or engineering. Example of this course can be University Physics, Modern Physics, Biostatistics, Differential Equation, Linear Algebra, Computational Physics, or other equivalent courses (upon Instructor approval).

PLSC 2840 International Law & Human Rights (4 Credits)

This course explores the role that international law plays in promoting human rights. Why did states first commit to international human rights protections after the Second World War? Why did states voluntarily surrender their sovereignty by signing and ratifying human rights treaties that limit their freedom to act domestically? Does this international law influence governments' human rights practices? Who enforces international human rights law? Which countries are leaders or laggards when it comes to international human rights? This course can count toward the sub-field requirement for PLSC majors in either law or comparative/international politics.

RLGS 2011 Religion, Environmentalism, and Politics (4 Credits)

How does religion mediate the relationship between people and the natural world? How do different religious traditions understand and interpret the natural world and humans' responsibility to and for it? Is it possible to reconcile an understanding of the world as divinely created with human destruction of the environment—and, if not, then what are the political consequences? In this course, we will consider a variety of disciplinary approaches to topics related to religion, environmentalism, and politics, taking Abrahamic and indigenous religions as our key examples. From urban gardening to green Islam to Standing Rock to eco-feminism, we'll use theories about religion and culture to understand the complex intersections of faith, policy, and planetary crisis. The course includes a community engagement component that will bring us to a local faith-based urban farm where we will discuss course texts as we help prepare for the 2020 growing season. Cross-listed with ANTH 2011 and JUST 2011.

SJUS 2010 Social Justice: Exploring Oppression (1,2 Credit)

This course critically examines ideas, figures, and texts from the social justice tradition, allowing students the opportunity to develop a deeper understanding of the broad philosophical and historical contexts in which their own social justice efforts take shape. Particularly focused on racial justice, this course also lays the foundation for work that Social Justice LLC students will do in their second and third quarters, as well as work they will do in the Denver community. Restricted to Social Justice LLC students.