Climate and Sustainable Growth

Department Website: https://climate.uchicago.edu/chicago-curriculum-on-climate-and-sustainable-growth/

Program of Study

Climate change is one of the central challenges facing humanity. Increasing temperatures due to CO_2 emissions, by changing ecosystems, weather patterns, sea levels, among other harms, threatens humans and other living things. Meeting this challenge entails transforming the global energy system to eliminate carbon emissions from fossil fuels. At the same time, energy poverty is still common in many parts of the world. Allowing people in those parts of the world to flourish and develop, as is their right, requires increasing energy access while the energy system is transformed, creating a double challenge.

Energy system decarbonization may be complemented by carbon removal, solar geoengineering, and adaptation. Understanding these choices demands knowledge of the science of climate change, the economics and the history of energy systems, environmental management, and the social and political challenges of managing human societies within planetary constraints. Moreover, because carbon dioxide mixes in the atmosphere, climate change presents a global free-rider problem. Each nation benefits if others bear a greater share of the costs of emissions reductions. The free-rider problem is exacerbated by inequalities in past emissions and in current access to energy. Crafting solutions to this problem requires an understanding of politics, law, economics, and theories of justice.

The Climate and Sustainable Growth major offers a multidisciplinary approach to these problems. It covers the core physical and biological science aspects of the problem, as well as the social, economic, political, and humanistic perspectives needed to understand how climate change will affect people and other living things, and to understand and craft solutions. It offers a 360-degree view of the challenges of climate change and sustainable development.

The program of study consists of:

1. Eight foundational courses that introduce students to core aspects of the problem from a wide variety of perspectives.
2. Four courses within the student's choice of specialization. The specialization options are (i) Climate Science and Technology; (ii) Politics, Economics, and Society; (iii) Science Communication; and (iv) Finance.
3. The Capstone Seminar and Project (two courses).

Summary of Requirements for the BA in Climate and Sustainable Growth

General Education

Students must have a reasonable base of mathematics and science to complete the major or minor, and must take the following as part of their general education requirements:

Two quarters of calculus:		200
MATH 13100-13200	Elementary Functions and Calculus I-II (or higher)	
One of the following physical sciences sequences: *		200
CHEM 10100 & CHEM 10200	Introductory General Chemistry I and Introductory General Chemistry II (or higher)	
or		
PHYS 12100-12200	General Physics I-II (or higher)	
One quarter from the following BIOS courses:		100
BIOS 10130	Principles of Biology (or higher)	
BIOS 10140	Inquiry-based Exploration of Biology (or higher)	
One quarter from the following BIOS courses:		100
BIOS 13132	Ecology in the Anthropocene	
BIOS 20153	Fundamentals of Ecology and Evolutionary Biology	
Total Units		600

*Note: Students may petition to substitute equivalent Core Physical Science Sequences for Science Majors.

Major Courses

The total number of courses is 14, made up as follows:

Foundational Courses (8) #		800
CCSG 19000	The Climate and Growth Challenge	
CCSG 20100	The Science of Climate Change	
CCSG 20300	The Economics of Climate Change and Energy	

CCSG 20500	Energy: Science, Technology, and Human Usage	
CCSG 20700	Climate Change: Law and Ethics	
CCSG 20900	Politics and Law of Climate Change and Energy	
CCSG 21100	Climate Change: Impacts and Adaptation	
CCSG 25000	Climate, Energy, and Development: Global Perspectives in Practice *	
Four Courses in One Specialization (see below)		400
The Capstone Seminar and Project		200
CCSG 29001	Capstone Seminar	
CCSG 29002	Capstone Project	
Total Units		1400

#**Note:** Students who have taken a similar course in another department to one of the foundational courses will count that course toward the CCSG major and **may not** take the foundational course. For example, a student who has taken GEOS 13300 The Atmosphere satisfies the requirement for CCSG 20100 The Science of Climate Change). Please consult with the Director of Undergraduate Studies for relevant substitutions.

***Note on the September Travel Abroad course (**CCSG 25000**):** Students majoring in Climate and Sustainable Growth may take the September Travel Abroad course only after they have completed at least five of the foundational courses.

The Specializations

Students must declare one of the following specializations by the beginning of their fourth year.

Climate Science and Technology

Students in the Climate Science and Technology specialization must choose four courses from the following:

GEOS 22060	What Makes a Planet Habitable?
GEOS 23205	The Cryosphere: Glaciers and Ice Sheets
GEOS 23600	Chemical Oceanography
GEOS 23900	Environmental Chemistry
GEOS 24300	Paleoclimatology
GEOS 24800	Climate Systems Engineering
GEOS 24810	Removing Carbon Dioxide from the Atmosphere
GEOS 29002	Field Course in Modern and Ancient Environments
MENG 15300	Energy Matters - From Mine to Line
MENG 21100	Principles of Engineering Analysis I #
MENG 25310	Energy Storage and Conversion Devices #
MENG 25320	Electrochemical Principles and Methods #

Students should be aware that MENG courses have substantial prerequisites. If you are counting on taking those courses to complete the major, make sure you check that you have taken the appropriate prerequisites.

Politics, Economics, and Society

The specialization is divided into three clusters, (i) economics, (ii) politics and law; and (iii) social impacts. Students are free to mix courses among the clusters. If a student is double-majoring, they may wish to take all of their specialization courses from entirely one cluster, such as economics, if that is their other major.

Students must take four courses from the list below.

ECONOMICS CLUSTER	
BUSN 20800	Big Data
CCSG 21025	Climate Crossroads: Policy, Diplomacy, and the Global Future
PBPL 26930	Environmental Economics: Theory and Applications
PBPL 28633	How Do We Evaluate Policies?: An Empirical Approach
POLITICS & LAW CLUSTER	
CEGU 23100	Environmental Law
CEGU 24102	Environmental Politics
CEGU 24701	U.S. Environmental Policy
CEGU 24776	International Environmental Policy

PLSC 23501	International Political Economy
PLSC 24203	International Environmental Politics
SOCIAL IMPACTS CLUSTER	
CEGU 26260	Environmental Justice in Principle and Practice I
CEGU 26261	Environmental Justice in Principle and Practice II
HIST 22707	The Industrial Revolution
PBPL 28728	Climate Change and Society: Human Impacts, Adaptation, and Policy Solutions
PBPL 27818	Philosophical Foundations of Public Policy
PBPL 25704	Environmental Justice in Chicago
PLSC 22202	Philosophies of Environmentalism and Sustainability
RETH 30702	Introduction to Environmental Ethics
SSAD 29400	Climate Change and Human Mobility

Science Communication

Students in the Science Communication specialization must complete SCPD 11800 Introduction to the Field of Science Communication and must choose three additional courses as outlined below.

Required:		
SCPD 11800	Introduction to the Field of Science Communication	100
Choose 3 from the list below:		
SCPD 11300	Science Communication: Crafting a Science Think Piece	100
SCPD 11400	Science Communication: Producing a Science Podcast	100
SCPD 11500	Science Communication: Designing a Science Exhibit	100
SCPD 10100	Science Newsroom	100
CEGU 20180	Writing the City	100
CEGU 23517	Pixels, Planet, Power: Visualizing Urban & Environmental Change	100

Finance

Students must take a total of four courses as outlined below.

One of:		100
BUSN 20100	Financial Accounting	
or BUSN 30000	Financial Accounting	
BUSN 20140	Accounting and Financial Analysis	
or BUSN 30116	Accounting and Financial Analysis	
One of:		100
BUSN 20400	Investments	
or BUSN 35000	Investments	
BUSN 20410	Corporation Finance	
or BUSN 35200	Corporation Finance	
BUSN 35001	Introductory Finance	
Two of:		200
BUSN 20330	Building the New Venture	
BUSN 20800	Big Data	
or BUSN 41201	Big Data	
BUSN 30133	Navigating the ESG Landscape: Sustainability Information and Analysis	
BUSN 34113	Impact Investing	
BUSN 35120	Portfolio Management	
BUSN 41000	Business Statistics	
BUSN 42129	The Political Economy of Climate Change	
Total Units		400

Capstone

Students must complete a capstone requirement, which they will typically take in their senior year. The capstone requirement consists of the Capstone Seminar and a capstone project. The Capstone Seminar guides students engaged in research design, data collection and analysis, and thesis writing and will be offered in the

Autumn Quarter. To create cross-fertilization of ideas, as well as student community, the seminar will include students from all the specializations. The project continues through the Spring Quarter.

Grading

Students who are majoring in Climate and Sustainable Growth must receive quality grades in courses taken to meet the requirements of the program.

Honors

Eligibility for honors requires a GPA of 3.5 or higher overall and in each of the courses taken to meet the requirements of the program, and a BA Thesis or Practice Capstone Project that is judged to merit honors.

Advising

Majors should plan their course of studies in consultation with the Student Affairs Administrator, Trista Trone.

Double Majoring

Majoring in Climate and Sustainable Growth and another major is permitted. Students in a given major may be required to substitute courses from that major for the foundational courses in CCSG (e.g., geophysical sciences majors who have taken either GEOS 13300 The Atmosphere or GEOS 24220 Climate Foundations will count that course toward the CCSG major instead of CCSG 20100 The Science of Climate Change). Please consult the Coordinator of Undergraduate Studies for the necessary substitutions. Furthermore, students may petition to substitute the BA Thesis Workshop of their other major for the Climate and Sustainable Growth Capstone sequence, provided their thesis involves climate change and energy.

Summary of of Requirements for the Minor

The minor in Climate and Sustainable Growth consists of six courses: two mandatory courses and a choice of four other courses drawn from the foundational courses from the major. The two mandatory courses are (i) CCSG 19000 The Climate and Growth Challenge and (ii) CCSG 20100 The Science of Climate Change. Students are strongly encouraged to take CCSG 20100 The Science of Climate Change and CCSG 20300 The Economics of Climate Change and Energy as supporting courses but need not if they have covered equivalent content in their major.

Because courses for the minor may overlap with courses a student is taking for their major, they must have approval from the Director of Undergraduate Studies for the set of courses used for the minor. Students may not take courses for the minor that are in the same area of study as their major (e.g., they may not take CCSG 20300 The Economics of Climate Change and Energy if they are an economics major). In addition, students in the minor may not take CCSG 25000 Climate, Energy, and Development: Global Perspectives in Practice unless they are in their fourth year at the College and have taken at least four of the required courses for their minor.

Courses in the minor must be taken for quality grades and may not be double-counted with the student's major(s), other minors, or general education requirements.

Students who wish to declare a minor in Climate and Sustainable Growth must reach out to the program contact listed below to indicate their intention to complete the minor and have their Consent to Complete a Minor Program (https://college.uchicago.edu/sites/default/files/documents/College%20Dean%20of%20Students/Minor%20Consent%20Form.pdf) form signed. Students will need to submit the signed form to their College adviser before the end of the Spring Quarter of their third year.

Email List

The Climate and Sustainable Growth major is supported by the Institute on Climate and Sustainable Growth (https://climate.uchicago.edu/). The Institute offers internships, fellowships, and lectures and speaker series related to the problems of climate change, energy, and sustainable growth. Students majoring in Climate and Sustainable Growth or who are interested in the major should subscribe to our email list to get information about these activities. You can subscribe automatically here (https://share.hsforms.com/1EsXeMoMJTyeEaYl8p9E2vwrg3jk/).

Climate and Sustainable Growth Courses

CCSG 19000. The Climate and Growth Challenge. 100 Units.
The global energy and climate challenge is perhaps the most important problem society faces. It requires identifying approaches to ensure people have access to the inexpensive and reliable energy critical for human development, without causing disruptive climate change or unduly compromising health and the environment. The course pairs technical and economic analysis to develop an understanding of policy challenges in this area. Lecture topics will include the past, present, and future of energy supply and demand, global climate change, air pollution and its health consequences, selected energy technologies such as solar photovoltaics, nuclear power, unconventional oil and gas, and an analysis of theoretical and practical policy solutions in developed and emerging economies.
Instructor(s): Michael Greenstone Terms Offered: Spring

Prerequisite(s): BPRO 22510: third or fourth-year status. CEGU 22510, CCSG 19000, ECON 16550, PBPL 22510: First-year student by permission of instructor only.
Equivalent Course(s): BPRO 22510, ECON 16550, PBPL 22510, CEGU 22510

CCSG 20100. The Science of Climate Change. 100 Units.
This course provides non-science majors with a rigorous yet accessible foundation in the science of climate change, equipping students to engage critically with climate impacts, policy debates, and emerging interventions. Topics covered include methods of climate science, Earth's energy balance and greenhouse effects, natural and anthropogenic perturbation to climate, extreme weather and climate change, role of oceans and carbon cycles, and geo-engineering.
Instructor(s): BB Cael Terms Offered: Winter
Prerequisite(s): Completion of the General Education Physical Sciences Sequence is recommended.

CCSG 20300. The Economics of Climate Change and Energy. 100 Units.
This course covers relevant portions of introductory microeconomics and economic issues associated with climate change and energy using the problems of climate change and energy to illustrate basic economic concepts. It also introduces students to tools for mitigating emissions, such as taxes, subsidies, regulation, and quantity controls. As with the climate science course, this course requirement could be satisfied with one or more advanced economics courses.
Instructor(s): Conor Carney Terms Offered: Autumn
Equivalent Course(s): CEGU 20300

CCSG 20500. Energy: Science, Technology, and Human Usage. 100 Units.
This course covers the technologies by which humans appropriate energy for industrial and societal use, from steam turbines to internal combustion engines to photovoltaics. We also discuss the physics and economics of the resulting human energy system: fuel sources and relationship to energy flows in the Earth system; and modeling and simulation of energy production and use. Our goal is to provide a technical foundation for students interested in careers in the energy industry or in energy policy. Field trips required to major energy converters (e.g., coal-fired and nuclear power plants, oil refinery, biogas digester) and users (e.g., steel, fertilizer production). This course is part of the College Course Cluster program: Climate Change, Culture and Society.
Instructor(s): E. Moyer Terms Offered: Spring
Prerequisite(s): Completion of General Education Physical Sciences Sequence (physics is most relevant) and 2 Quarters of Calculus is recommended.
Equivalent Course(s): CEGU 24705, GEOS 24705, ENSC 21100, GEOS 34705

CCSG 20700. Climate Change: Law and Ethics. 100 Units.
Climate change raises central issues of justice and morality. Some countries or places have emitted far more carbon dioxide than other countries or places. The most vulnerable places are often poor and have had relatively low emissions. In addition, because carbon dioxide stays in the atmosphere for centuries, decisions today affect people who will be alive in the distant future. This course will address issues of justice and climate change, exploring what obligations of people living in one country or time have to people living in other countries or times. We will ask what the resolution of those issues means for policies to address climate change. Students should be prepared to take all sides of these issues, including positions that they are deeply uncomfortable with.
Instructor(s): David Weisbach Terms Offered: Winter
Equivalent Course(s): CEGU 20701, SSAD 20700

CCSG 20900. Politics and Law of Climate Change and Energy. 100 Units.
This## course## explores## the## political,## economic,## and## social## dimensions## of## climate## change## policy,## with## a## focus## on## the## challenges## of## climate## mitigation## and## adaptation## at## both## domestic## and## international## levels.## Students## will## engage## with## key## issues## such## as## the## role## of## social## equity# #provisions## in## green## industrial## policies,## the## complexities## of## passing## and## implementing## climate## legislation,## and## the## factors## that## shape## public## support## for## climate## action.## Through## a## combination# #of## policy## analysis,## readings,## and original projects# students## will## critically## examine## how# political## considerations,## organized## interests,## economic## incentives## and## identity## concerns## influence# climate policy outcomes across different regions and contexts.#
Instructor(s): R. Gulotty Terms Offered: Winter
Equivalent Course(s): PLSC 20217

CCSG 21025. Climate Crossroads: Policy, Diplomacy, and the Global Future. 100 Units.
The world's atmosphere and oceans are rapidly warming-the result of human economic progress fueled by fossil fuels and other greenhouse gas emissions. A 2018 analysis by the Intergovernmental Panel on Climate Change concluded that stabilizing the atmosphere requires reaching "net zero" emissions, where as much greenhouse gas is removed from the atmosphere as is emitted. Achieving this demands a transformation of the global economy on a scale without historic precedent. This course begins by describing the nature and complexity of the climate policy challenge. It then explores the policy levers available to governments at both national and international levels to address it. The course considers perspectives from wealthy, advanced economies-historically the largest source of emissions-as well as emerging economies with significant development needs and rising emissions. It reviews the international framework for cooperation and negotiation on climate change through the United Nations Framework Convention on Climate Change. Finally, students will examine the challenges democratic

societies face in maintaining public consensus on climate action, focusing on shifting U.S. policy frameworks. The course will be taught by three experienced practitioners: the White House lead on climate policy in the Obama and Biden Administrations, the former Foreign Minister of Pakistan, and the U.S.'s longtime lead negotiator at the UNFCCC and other international treaty negotiations.
Instructor(s): John Podesta, former White House Chief of Staff and Senior Advisor for International Climate Policy; Hina Rabbani Khar, former Foreign Minister of Pakistan; Sue Biniaz, Principal Deputy Special Envoy for Climate at the U.S. State Department; and Conor Carney Terms Offered: Autumn
Note(s): This course can count towards the Politics, Economics, and Society specialization in for the Climate and Sustainable Growth major.
Equivalent Course(s): CEGU 21025, PBPL 21025, ECON 26740, GLST 21025

CCSG 21100. Climate Change: Impacts and Adaptation. 100 Units.
Climate change would not be an important issue but for the impacts. Impacts are not only purely physical or biological, such as changes in weather patterns or sea level rise, but also depend on adaptation. For example, people will adjust their farming practices in response to changes in the climate, partially alleviating the impact. This course would study the impacts of climate change and possible adaptations people will make. The course will be designed around the use and presentation of data on impacts, focusing on the data produced by IPCC Working Group II.
Instructor(s): Conor Carney, David Keith, Trevor Price Terms Offered: Spring

CCSG 22501. Climate Change and Human Health. 100 Units.
Climate change is one of the greatest global health threats facing the world in the 21st century. Through this course, students will gain foundational knowledge in the health effects of climate change. We will begin with several lectures on climate science as it related to the patterns of weather extremes experienced by populations. We will then identify the varying health outcomes linked to different climate-related exposures, emphasizing the specific impacts in vulnerable and high-risk populations. Specific topics include the effects of air pollution, extreme heat and heat waves, droughts, tropical cyclones, changes in vector habitats, and sea-level rise. Finally, we will discuss strategies for public health practitioners to aid communities in preventing or alleviating these adverse effects.
Instructor(s): K. Burrows Terms Offered: Autumn
Prerequisite(s): PBHS 32100 or STAT 22000 or introductory statistics
Equivalent Course(s): CEGU 31720, PBHS 31720, HLTH 21720, CEGU 21720

CCSG 22502. Urban Design with Nature. 100 Units.
This course will use the Chicago region as the setting to evaluate the social, environmental, and economic effects of alternative forms of human settlement. Students will examine the history, theory and practice of designing cities in sustainable ways - i.e., human settlements that are socially just, economically viable, and environmentally sound. Students will explore the literature on sustainable urban design from a variety of perspectives, and then focus on how sustainability theories play out in the Chicago region using a range of social science approaches and urban design tools. In Autumn 2026, the class will focus on how various tenets of sustainable urbanism-affordable housing, mobility justice, and equitable green space planning, amidst myriad pressures and risks associated with climate change. Students enrolled in Autumn 2026 must be willing to spend time outdoors, moving about campus and its surroundings, and on occasional field trips.
Instructor(s): Sabina Shaikh and Emily Talen Terms Offered: Autumn
Prerequisite(s): Third or fourth-year standing, or MA enrolled.
Equivalent Course(s): BPRO 27155, ARCH 27155, CEGU 37155, CHST 27155, CEGU 27155, GISC 27155, PBPL 27156

CCSG 22503. Environmental Law. 100 Units.
This course will examine the bases and assumptions that have driven the development of environmental law, as well as the intersection of this body of law and foundational legal principles (including standing, liability, and the Commerce Clause). Each form of lawmaking (statutes, regulations, and court decisions) will be examined, with emphasis on reading and understanding primary sources such as court cases and the laws themselves. The course also analyzes the judicial selection process in order to understand the importance of how the individuals who decide cases that determine the shape of environmental law and regulations are chosen.
Instructor(s): Ray Lodato Terms Offered: Winter
Prerequisite(s): 3rd or 4th year standing, or consent of instructor
Equivalent Course(s): PBPL 23100, CEGU 23100

CCSG 22504. Environmental Politics. 100 Units.
Politics determines not only what particular faction holds power, but the parameters upon which contests for power are conducted. Competing political factions may diverge in the details of the policies they favor, but may agree on a central organizing principle upon which their policy differences are contested. This course acknowledges that such principles exist and structure politics, economics, and social arrangements, but also challenges the notion that these are immutable, and argues that other principles could be substituted which would drastically change these arrangements. The course introduces students to alternative theories of economics, politics, and environmental policy that challenge mainstream notions of what is acceptable under the current structural and institutional constraints, including how the retreat to notions of realism and practicality place limits on changes necessary to preserve and protect the natural environment.

Instructor(s): R. Lodato Terms Offered: Spring
Equivalent Course(s): CEGU 24102, PBPL 24102

CCSG 22505. U.S. Environmental Policy. 100 Units.
How environmental issues and challenges in the United States are addressed is subject to abrupt changes and reversals caused by extreme partisanship and the heightened significance of the issues for the health of the planet and all its inhabitants. The relatively brief history of this policy area, and the separate and distinct tracts in which public lands and pollution control issues are adjudicated, makes for a diverse and complex process by which humanity's impact on the natural world is managed and contained. This course focuses on how both types of environmental issues are addressed in each branch of the Federal government, the states and localities, as well as theories of how environmental issues arrived onto the public agenda and why attention to them is cyclical. Students are encouraged to understand the life cycle of public policy from its initial arrival on the public agenda to the passage of legislation to address adverse conditions, as well as how changes in the policy occur after the inevitable decline of intensive attention.
Instructor(s): R. Lodato Terms Offered: Autumn
Equivalent Course(s): PBPL 24701, CEGU 24701

CCSG 22506. International Environmental Policy. 100 Units.
Environmental issues have become a prominent part of the work of international organizations and their member nations. However, the resolution to issues and concerns shared in common by the nations of the world often faces obstacles based on access to wealth and resources, political and military power, and the demands of international economic institutions. While multinational agreements have been achieved and successfully implemented, resolutions to issues such as climate change have been harder to achieve. The course will look at the origins of international cooperation on environmental issues, several case studies of issues upon which the international community has attempted to bring about cooperative solutions (climate change, the ozone hole, climate refugees, etc.), and the work that regional associations of nations have done to jointly address shared environmental challenges. In addition, speakers from various consulates have addressed the class to discuss environmental policymaking in their countries.
Instructor(s): R. Lodato Terms Offered: Spring
Equivalent Course(s): CEGU 24776, PBPL 24776

CCSG 22507. Environmental Justice in Principle and Practice I. 100 Units.
This course will investigate the foundational texts on environmental justice as well as case studies, both in and out of Chicago. Students will consider issues across a wide spectrum of concerns, including toxics, lead in water, waste management, and access to greenspaces, particularly in urban areas. These topics will be taught in accompaniment with a broader understanding of how social change occurs, what barriers exist to producing just outcomes, and what practices have worked to overcome obstacles in the past. The class will welcome speakers from a variety of backgrounds to address their work on these topics.
Instructor(s): Ray Lodato Terms Offered: Autumn
Equivalent Course(s): CHST 26259, CEGU 26260, PBPL 26260

CCSG 22508. Environmental Justice in Principle and Practice II. 100 Units.
In this quarter, students will learn and practice methods to conduct a research project with a local environmental organization. Building on knowledge gained in the first half of this course, students will examine what makes a condition an environmental justice issue, how to conduct a literature review, how to develop and administer a questionnaire for key informant interviews, and how to access, understand, and utilize Census data. Students should expect to work in the community as well as the classroom, and in close collaboration with classmates. The class will conduct "deep-dive" research into the community selected, and will learn not only about the area, but techniques for how to do community-based research in a manner that acknowledges and appreciates the lived wisdom of the neighborhood's residents. The result will be a research report delivered to the community organization with students in the class listed as co-authors.
Instructor(s): Ray Lodato Terms Offered: Winter
Equivalent Course(s): CHST 26261, PBPL 26261, CEGU 26261

CCSG 22509. Removing Carbon Dioxide from the Atmosphere. 100 Units.
This class will survey the science of removing fossil fuel carbon dioxide from the atmosphere, using industrial equipment or by altering soils or natural waters. The various potential strategies have different capacities, costs, and environmental impacts, and some are more verifiable than others. We will evaluate them within the context of the geochemistry of groundwaters and the oceans, and Earth's changing climate and carbon cycle, to get a picture of just how big a pickle we are in.
Instructor(s): B.B. Cael Terms Offered: Spring
Prerequisite(s): Familiarity with chemistry will be helpful.
Equivalent Course(s): GEOS 24810

CCSG 22701. Introduction to the Field of Science Communication. 100 Units.
Communicating accurately and effectively about science to non-expert audiences is quickly becoming an essential skill for scientists and non-scientists alike. This course provides a foundation in science communication theory and practice that prepares students to communicate about their own research, or someone else's across a wide range of media formats and situations. Broadly scoped, this course covers the history of science communication, different approaches to engaging public audiences about science, theories of communication

and science education, as well as practical training in science journalism and science writing. Each week we will focus our learning by investigating and analyzing a different historical case study from the perspective of science communication including breakthroughs, emergencies, debates, innovations, controversies, and everyday applications of research. Concepts and skills we will cover include the deficit model of science communication, communicating uncertainty and risk, engaging diverse stakeholders, addressing misconceptions, fact checking to ensure scientific accuracy, and communicating about major discoveries and everyday practice. No prior knowledge of science communication is required. All students wishing to minor in SCPD must take SCPD 11800 Introduction to the Field of Science Communication, which will cover foundational theories, practices, and cases in science communication.
Instructor(s): Jordan Bimm Terms Offered: Spring
Equivalent Course(s): HIPS 11800, SCPD 11800

CCSG 22702. Science Communication: Crafting a Science Think Piece. 100 Units.
Science think pieces are an important genre of public writing. Think pieces are longform journalism typically ranging between 2,000 and 5,000 words that appear in print and online publications. Readers of all kinds turn to science think pieces to understand critical issues in STEM fields and get a big picture perspective. Science think pieces provide deep context, informed perspective, and expert synthesis of the most recent data and findings. They have the power to shape public opinion and influence science policy. This course guides students through the process of conceiving, developing, pitching, writing, and potentially publishing an engaging and persuasive science think piece. Through reading-inspired group discussions and instructor-led writing projects, the course introduces students to current theories and best practices of science communication as well as everyday processes in science journalism and public-facing science writing. Students will finish the course with a polished science think piece ready for submission to potential venues for publication. No prior knowledge of science communication is required.
Instructor(s): Jordan Bimm Terms Offered: Autumn Spring Winter
Prerequisite(s): Three quarters of physical or biological (including neuroscience) sciences. Third- or fourth-year standing or consent of instructor.
Equivalent Course(s): SCPD 11300, HIPS 11300, PHSC 28104

CCSG 22703. Science Communication: Producing a Science Podcast. 100 Units.
Podcasts are one of the most popular ways for non-experts to learn about science and for working scientists to follow happenings in other fields. Podcasts are audio productions typically ranging between 20 and 45 minutes. Science podcasts provide context, perspective, and synthesis to diverse audiences. They have the power to highlight recent findings, surface the everyday aspects of scientific research practices, amplify diverse voices in the sciences, and combat misinformation. This course prepares students to create science content in audio formats through practical studio experience. It provides a platform for science storytelling, an introduction to science communication theory, and covers science journalism best practices. Emphasis will be placed on crafting compelling audio stories, interviewing techniques, narration, sourcing audio clips and samples, editing, accessibility, and creating show notes and supporting materials. Students will finish the course with a polished science podcast episode ready for publishing. No prior knowledge of science communication is required.
Instructor(s): Jordan Bimm Terms Offered: Spring Winter
Equivalent Course(s): SCPD 11400, HIPS 11400

CCSG 22704. Science Communication: Designing a Science Exhibit. 100 Units.
For more than a century, public science exhibits have popularized and increased access to scientific knowledge. Today, science exhibits are typically found at museums, planetariums, libraries, zoos, historical sites, universities, and online. Science exhibits allow the public to engage with material examples of scientific work and its products, learn from interpretive text and diagrams, and make connections between the history of science and science in the present day. They have the ability to foster public support for science, inspire future and early career scientists, and make science more accessible for audiences of all ages. This course prepares students to conceptualize, propose, design, install, curate, and evaluate science exhibits. The class will include visits to science collections and museums, interactions with professional curators, and will explore practical aspects of science communication theory. Students will finish the course ready to develop effective and informative science exhibits in both small and large formats, from a display case to an exhibit hall. No prior knowledge of science communication is required.
Instructor(s): Jordan Bimm
Equivalent Course(s): SCPD 11500

CCSG 22705. Science Newsroom. 100 Units.
Newsrooms are fast-paced environments where stories are pitched, assigned, revised, fact-checked, and published on tight deadlines. This course places students in the role of science reporters, combining instruction in science communication theory with the everyday practices of journalism. In twice-weekly meetings, students will discuss current issues in science and culture and pitch stories to the instructor, who serves as newsroom editor. Instruction will cover core journalistic skills such as interviewing, investigative research, story structure, ensuring scientific accuracy, and navigating the editorial process. Students will also learn to use professional resources, including EurekAlert for accessing science press releases and identifying strong story ideas, and Retraction Watch for tracking corrections and retractions in the scientific record. Assignments will be drawn from campus research as well as local, national, and international news in science, technology, exploration, and medicine, producing work across formats including short "spot news" articles, in-depth features, and audio,

video, visual, or social media pieces. They will finish the course with experience working at newsroom pace, a professional-quality portfolio of diverse science journalism products, and insights from guest visits by practicing science journalists.
Instructor(s): Jordan Bimm Terms Offered: Spring
Equivalent Course(s): SCPD 10100

CCSG 22707. Pixels, Planet, Power: Visualizing Urban & Environmental Change. 100 Units.
This hands-on methods course trains students how to turn streams of satellite imagery into persuasive, narrative visualizations of urban, environmental, and planetary change. Using Google Earth Engine and other open-source tools, you will learn how to acquire, preprocess, analyze, and map earth-observation data, from spectral indices and machine-learning classification methods to time-series composites and cartographic design. Short lectures frame the technical labs within larger questions of power, representation, and justice, encouraging you to critique the assumptions that shape geospatial workflows even as you master them. Each year, the class grounds these skills in a fresh, high-stakes theme, ensuring that evolving geospatial methods confront the most pressing environmental and urban challenges. No prior coding or mapping experience is required; curiosity and a willingness to experiment are essential. The course fulfills the CEGU methods requirement and may also be eligible to meet methods requirements in other social sciences, sciences, and humanities majors.
Instructor(s): Grga Basic Terms Offered: Winter
Equivalent Course(s): ARCH 23517, MADD 13517, CEGU 23517, CEGU 33517, ARTV 20665, MACS 23517

CCSG 25000. Climate, Energy, and Development: Global Perspectives in Practice. 100 Units.
This three-week intensive course takes students to West Texas, New York, and India to examine how communities, investors, and governments navigate the tensions between energy access, economic development, and climate goals. By engaging directly with oil field operators, capital allocators, grid regulators, policymakers, and rural communities facing energy poverty, students gain a 360-degree view of the climate and growth challenge, from the wellhead to the trading floor to the rural villages where the consequences of energy decisions are felt most acutely. The course is built around experiential learning. Site visits are not supplementary to instruction; they are the instruction. Each excursion is the equivalent of a classroom session, and the conversations and observations that take place on-site are the primary texts of the course. Students complete written assignments at each stop, including group presentations, policy memos, and a field journal documenting their observations across all three locations.
Instructor(s): Conor Carney Terms Offered: Summer. Required for CSG majors, open to CSG minors.
Prerequisite(s): Must be a CSG major or minor, or consent from instructor. Completion of at least 5 foundational CCSG courses it strongly recommended.

CCSG 29001. Capstone Seminar. 100 Units.
The Climate and Sustainable Growth Major requires completion of a Capstone Seminar and Capstone Project, to be taken consecutively in the fourth year.
Terms Offered: Autumn. Not offered in 2025-2026

CCSG 29002. Capstone Project. 100 Units.
The Climate and Sustainable Growth Major requires completion of a Capstone Seminar and Capstone Project, to be taken consecutively in the fourth year.
Terms Offered: Spring Winter. Not offered in 2025-2026.