Winter 2024

Climate Change: Social Science Perspectives Geography and Environmental Studies

GEOG 2500/ENST 2500 Vladimir Díaz-Cuéllar vladimirdiazcuellar@cunet.carleton.ca

COURSE DESCRIPTION

The course provides an overview of the historical origins and possible socio-economic drivers of climate change. The first sessions will present an introduction to the physical basis, while the subsequent sessions will trace the historical process leading to the construction of the modern economic system, examine the main socio-economic drivers of greenhouse gas emissions, summarize theoretically the features of such system, and discuss the possible alternative pathways forward. The lectures will provide a panoramic synopsis of these topics, to be complemented by the mandatory readings and thematic tutorials. The course aims to provide the basic tools to discuss the climate crisis from a social science perspective, but also as citizens in our community, since it is arguably the most important issue of our century.

Learning Outcomes

By the end of this course, students will be able to:

- Describe the historical origins of climate change.
- Identify its socio-economic drivers.
- Describe the main features of our contemporary economic system.
- Reflect critically on the different technological, economic, and political pathways to overcome the crisis
- Participate as informed citizens in community discussions about these topics.

Texts

All readings in the course calendar will be available on the course website at Brightspace and the library. Please note that assigned texts may be adjusted slightly over the course of the term depending on how our class conversations develop. No minor changes to readings will be made within less than a week of the class session in question.

COURSE CALENDAR

	Topics and required readings	Exams and assignments
	Introduction: the ongoing impacts of climate change and basic notions	
Week 1 January 10	McNeill, John Robert and Peter Engelke (2014) The Great Acceleration: An Environmental History of the Anthropocene since 1945. Cambridge: The Belknap Press of Harvard University Press. pp. 63-82.	

	The physical science basis of climate change	
	Guest lecture by Professor Derek Mueller.	
Week 2 January 17	IPCC (2021) Summary for Policymakers. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, pp. 3-32, doi: 10.1017/9781009157896.001. Available here.	
	Modern society's socio-nature metabolism at a glance	
Week 3 January 24	Smil, Vaclav (2017) Energy and Civilization: A History, London: The MIT press. Chapter 6, pp. 295-306.	
	Searching for the historical origins: the English Industrial Revolution,	
Week 4	colonialism, and population growth	
January 31	Hobsbawm, Eric (1996 [1962]) The Age of Revolution: 1789–1848, New York: Vintage books. Chapter 2, pp. 27-52.	
	The old world of peasants and nomads	
Week 5 February 7	Cronon, William (2003) Changes in the Land: Indians, Colonists, and the Ecology of New England, 20th anniversary edition, New York: Hill & Wang. Chapter 3, pp. 34-53.	
	Hobsbawm, Eric (1996 [1962]) The Age of Revolution: 1789–1848, New York: Vintage books. Chapter 8, pp. 149-167.	
Week 6 February 14	Towards a Capitalist world: the Global Industrial Revolution	
	Hobsbawm, Eric (1996 [1962]) The Age of Revolution: 1789–1848, New York: Vintage books. Chapter 9, pp. 168-181.	
	Hobsbawm, Eric (1994) The Age of Extremes: The Short Twentieth Century, 1914–1991, London: Michael Joseph. Chapter 9, pp. 257-286, Chapter 10, pp. 287-295, and Chapter 14, pp. 403-416.	
Week 7 February 21	Break Classes are suspended.	

Week 8 February 28		Midterm exam
Week 9 March 6	The Capitalist economic system's economic metabolism	
Week 10 March 13	The Capitalist economic system's socio-nature metabolism I: carbon, industry, and transportation	
	Smil, Vaclav (2017) Energy and Civilization: A History, London: The MIT press. Chapter 6, pp. 313-344.	
	Mattioli, et al. (2020) "The political economy of car dependence. A systems of provision approach", Energy Research & Social Science 66, 1-14.	
Maril or	The Capitalist economic system's socio-nature metabolism II: carbon and agriculture	
Week 11 March 20	Smil, Vaclav (2017) Energy and Civilization: A History, London: The MIT press. Chapter 6, pp. 306-313.	
Week 12 March 27	Overcoming the climate crisis I: individual choices, technological fixes, and green capitalism	
	Maniates (2001) "Individualization: plant a tree, buy a bike, save the world?", Global Environmental Politics 1:3, pp. 31-50.	
	Klein, Naomi (2015) This Changes Everything: Capitalism vs. the Climate, Vintage Canada. Chapter 8, pp. 256-290.	
	Green, Jessica F. (2021) "Does carbon pricing reduce emissions? A review of ex-post analyses", Environ. Res. Lett., 16, 043004, doi: 10.1088/1748-9326/abdae9, pp. 1-14.	
	Fancy (2021) "BlackRock hired me to make sustainable investing mainstream. Now I realize it's a deadly distraction from the climate-change threat", The Globe and Mail.	
Week 13 April 3	Overcoming the climate crisis II: corporate power and social movements	
	Brulle and Downie (2022) "Following the money. Trade associations, political activity and climate change", <i>Climatic Change</i> , 175:11, pp. 1-16.	

	InfluenceMap (2019) Big Oil's Real Agenda on Climate Change. How the oil majors have spent \$1Bn since Paris on narrative capture and lobbying on climate, pp. 4-20.	
	The Listening Post (2021) "Climate crisis: Can journalists make the world care?", Al Jazeera. (Watch the first part of the show).	
	Franta and Supran (2017) "The fossil fuel industry's invisible colonization of academia", The Guardian.	
	A post fossil-carbon future	
Week 14 April 10	Monbiot (2021) "Capitalism is killing the planet – it's time to stop buying into our own destruction", The Guardian.	
	A message from the future II: the years of repair.	
Weeks 15-16		Final exam

Further reading:

For those of you interested in learning more, during the term or after, here is a brief introductory bibliography that can be useful. These are not mandatory readings.

Natural sciences

IPCC (2023) Climate Change 2023. Synthesis Report.

Armstrong, et al. (2022) "Exceeding 1.5°C global warming could trigger multiple climate tipping points".

Crutzen, Paul (2002) "Geology of mankind".

Crutzen and Steffen (2003) "How long have we been in the Anthropocene Era?"

Crutzen and Stoermer (2000) "The Anthropocene".

Friedlingstein, et. al. (2023) "Global Carbon Budget 2023".

Hansen, James (2009) Storms of My Grandchildren: The Truth About the Coming Climate Catastrophe and Our Last Chance to Save Humanity.

Minx, et al. (2021) "A comprehensive and synthetic dataset for global, regional, and national greenhouse gas emissions by sector 1970–2018 with an extension to 2019".

Rockström, et. al. (2009a) "A safe operating space for humanity".

Rockström, et. al. (2009b) "Planetary Boundaries. Exploring the Safe Operating Space for Humanity".

Ruddiman, William F. (2014) Earth's Climate Past and Future.

Schneider, Steven H. (1998) Laboratory Earth: The Planetary Gamble We Can't Afford to Lose.

Smil, Vaclav (2001) Enriching the Earth: Fritz Haber, Carl Bosch and the Transformation of World Food Production.

Smil, Vaclav (2013) Should We Eat Meat? Evolution and Consequences of Modern Carnivory.

Smil, Vaclav (2017) Energy and Civilization: A History.

Steffen, et. al. (2015) "Planetary boundaries. Guiding human development on a changing planet".

History of climate science

Oreskes, Naomi and Erik M. Conway (2010) Merchants of Doubt: How a Handful of Scientists
Obscured the Truth on Issues from Tobacco Smoke to Global Warming.

Supran, Geoffrey and Naomi Oreskes (2017, 2020) "Assessing ExxonMobil's climate change communications (1977–2014)" and "Addendum".

Weart, Spencer R. (2003) The Discovery of Global Warming.

Economic, social, and environmental history

Ashton, T. S. (1948) The Industrial Revolution 1760-1830.

Braudel, F. (1979a) Civilization and Capitalism. 15th-18th Century, Volume I. The Structure of Everyday Life.

Braudel, F. (1979b) Civilization and Capitalism, 15th-18th Century, Volume II. The Wheels of Commerce.

Braudel, F. (1979c) Civilization and Capitalism, 15th-18th Century, Volume III. The Perspective of the World.

Cronon, William (1983) Changes in the Land: Indians, Colonists and the Ecology of New England.

Cronon, William (1991) Nature's Metropolis: Chicago and the Great West.

Hobsbawm, Eric (1962) The Age of Revolution 1789-1848.

Hobsbawm, Eric (1975) The Age of Capital. 1848-75.

Hobsbawm, Eric (1987) Age of Empire 1875-1914.

Hobsbawm, Eric (1994) The Age of Extremes. The Short Twentieth century.

Hobsbawm, Eric (1977) Industry and empire.

Hudson, Pat (1992) The Industrial Revolution.

Mantoux, Paul, (1905) The industrial revolution in the eighteenth century.

McNeill, John Robert (2001) Something New Under the Sun: An Environmental History of the Twentieth-Century World.

McNeill, John Robert and Peter Engelke (2014) The Great Acceleration: An Environmental History of the Anthropocene Since 1945.

Williams, Michael (2002) Deforesting the Earth: From Prehistory to Global Crisis.

Wolf, Eric R. (1982) Europe and the People Without History.

Economics and political economy

Hickel, Jason (2021) Less is more: how degrowth will save the world.

Marx, Karl (1976 [1867]) Capital. Vol. I.

Marx, Karl (1978 [1885]) Capital. Vol. II.

Marx, Karl (1981 [1894]) Capital. Vol. III.

Piketty, Thomas (2013) Capital in the Twenty-First Century.

Stern, Stiglitz and Taylor (2022) "The economics of immense risk, urgent action and radical change. Towards new approaches to the economics of climate change".

Climate politics and culture

Boykoff and Boykoff (2004) "Balance as bias. Global warming and the US prestige press".

Brulle and Werthman (2021) "The role of public relations firms in climate change politics".

Chomsky, Noam and Robert Pollin (2020) Climate Crisis and the Global Green New Deal: The Political Economy of Saving the Planet.

Mann, Michael E. (2021) The New Climate War.

McAllister, et al. (2021) "Balance as bias, resolute on the retreat? Updates & analyses of newspaper coverage in the United States, United Kingdom, New Zealand, Australia and Canada over the past 15 years".

EVALUATION

Students will be mainly evaluated on their knowledge and intellectual skills (although the lectures and tutorials will aim to provide cognitive strategies not necessarily evaluated).

1. Attendance (6%) and participation (9%)

This course is scheduled as a series of lectures, and attendance and participation are required: the course and your learning depend on your coming to class well prepared and on a regular basis. Together, attendance and participation represent a significant percentage of your total mark. We will take *attendance* at each class (attendance marks are divided equally by the number of classes). The *participation* mark aims to recognize in-class active listening with the assistance of a learning platform (6%) and reward insightful engagement with lectures and the assigned readings, throughout the term (3%).

2. Tutorials (25%)

Students are expected to participate in recurrent tutorial sessions led by the TAs. The purpose of the tutorials is to do some basic research and discuss climate change issues related directly to Canada; dissipate doubts and engage with the assigned readings; reflect critically on a documentary (viewed at the student's convenience) in conjunction with your peers; and build or consolidate basic academic skills. Students are expected to draw connections to lectures and readings and show engagement with the materials and will be evaluated accordingly.

3. Midterm exam (25%)

The test will evaluate the students' gained knowledge from the first block of topics in the term. Multiple-choice and short-answer questions will cover both lecture and reading contents. The test will take place at the regular scheduled class day and time, according to the course calendar.

4. Final exam (35%)

The final test will include all lecture topics and assigned readings. Since it represents the single largest fraction of the grade, three options that accommodate better to the student's skills are provided. Students must sign up for one by reading week.

Option 1. Oral exam. Students will be asked a number of questions during a period of 15 to 30 minutes.

Option 2. Written test. The final exam will be a combination of multiple-choice, short-answer, and short-essay questions. It will be administrated during the examination period.

Option 3. Essay (only for the 3rd and 4th year students). This paper is meant to help you engage with the knowledge gained from readings, lectures, and tutorials while help you developing research and writing skills. You will research and write a 1,500-2,500-word (excluding references) academic essay on a topic of your choosing amongst the predetermined ones

provided in advance. More details will be provided during the term. The paper is due by the end of the university examination period.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

TUTORIAL CALENDAR

	Topics
Week 1	Basic academic skills Workshop. Topics: Scholarly literature, gray literature, and media Reading scholarly literature: identifying methods, evidence, sub-conclusions and main conclusions, and highlighting and/or taking notes. Primary and secondary sources Suggested resources: National or international governmental agencies UN agencies International Energy Agency StatsCanada
	 Research institutions Canadian Centre for Climate Services Climate Data Canada (climatedata.ca) Canadian Centre for Policy Alternatives, CCPA Corporate Mapping Project Taking notes during lectures Staying optimistic: Britt Wray's 2019 TED talk "How Climate Change Affects Your Mental Health".
Week 2	Basic notions and the physical science basis Workshop. Review of basic notions including: - Units of area, mass and energy, - Carbon cycle, - Greenhouse gases and CO2 equivalent.
Week 3	Tipping points? Discussion based on a journal article and a podcast. Lenton, et al. (2019) "Climate tipping points — too risky to bet against", Nature, Vol 575, 28 November 2019, pp. 592-595. The climate pod with Richard Alley (2022), 1 hour.
Week 4	Canada's industrialization Discussion based on students' inquiry. Students, in advance, look for the appropriate sources and research the data for:

	 In what period, approximately, did Canada become an industrial country? In what period, approximately, did most of the energy used in Canada start to come from fossil fuels? When did Canada become an urban country?
Week 5	Visit to the exhibition The Art of Faye HeavyShield CU Art Gallery Visit with Fiona Wright, Academic and Public Programs Specialist.
Week 6	Review for midterm
	Canada's energy sector and fossil fuel industry Discussion based on reading and priming questions.
Week 9	In-advance questions: - What is the governments' messaging about energy? - What is the corporations' messaging about energy? - What is the media's messaging about energy? - What are the dominant or most commonly held ideas about the fossil fuel industry? (Including production, taxation, employment, etc.)
	Reading:
	 Hughes (2021) <u>Canada's Energy Sector</u>, Corporate Mapping Project, pp. 15-58. Additional non-mandatory recourses: Schalk (2023) "<u>By subsidizing the fossil fuel industry, Trudeau is fuelling a national emergency</u>", Canadian dimension. The National (2023) "<u>First nation gains partial control of largest fossil fuel reserve</u>", CBC, min. 31:45.
	Canada's GHG emissions Discussion based on students' inquiry.
Week 10	Students, in advance, look for the appropriate sources and research the data for: Total GHG emissions (all gases), as many years as possible. Total GHG emissions per capita (all gases), as many years as possible. Total GHG emissions per economic sector (all gases), as many years as possible.
Week 11	Continued
Week 12	Corporate power in Canada Discussion based on readings and about the Pathways Alliance's campaign.

Emily Eaton and Simon Enoch (2021) "The Oil Industry is Us: Hegemonic Community Economic Identity in Saskatchewan's Oil Patch" in: Carroll. (ed., 2021) Regime of obstruction. How corporate power blocks energy democracy, AU Press, Athabasca University, pp. 307-330. Chown (2023) "Oilsands companies' 'false' net zero ads spur complaint to Competition Bureau" Toronto Star. Environmental Defence (2023) "Canada's Delegation to COP28 includes more fossil fuel lobbyists than ever", Environmental Defence. Additional non-mandatory recourses: Graham, et al. (2020) "Carbon Capital's Political Reach. A Network Analysis of Federal Lobbying By The Fossil Fuel Industry From Harper To Trudeau", Canadian Political Science Review, Vol. 14, No. 1, 2020, 1-31. Eaton and Day (2020) "Petro-pedagogy. Fossil fuel interests and the obstruction of climate justice in public education", Environmental education research, vol. 26, no. Turner, Chris (2013) "Landscape at Twilight" in The War on Science: Muzzled Scientists and Wilful Blindness in Stephen Harper's Canada. Vancouver: Greystone. pp. 17-46. Podcast: <u>Commons Dynasties #2 – The Irvings</u> Podcast: "The ABCs of Big Oil" Global and Canadian climate movements Discussion based on a documentary. This changes everything (2015), 1.5 hours. Week 13 Students watch the documentary in their own time and come prepared to discuss it in connection to the course content. Review for final exam / Preparation for researching and writing the essay Some important matters: Week 14 Evidence-based arguments. Paraphrasing, and quotations with page number. Reference systems.

COURSE POLICIES

Communication and E-mail

The fundamental information for this course is contained in this syllabus. I will communicate other relevant information about the course to you via Brightspace. If you have more in-depth questions about the lectures and course material, book an appointment for a meeting during office hours. If you are not able to make office hours due to a valid reason, we can arrange for an appointment at another time in case of important matters. For any general consultation and advice, communicate with your TA to discuss them.

Late penalties

Late penalties will be enforced to ensure fairness in grading among students. Late assignments will be subject to a reduction of 10% of the overall assignment mark for each calendar day past the due date, unless accompanied by adequate written documentation for a legitimate reason.

Extenuating circumstances

Reasonable accommodations will be made for students with extenuating circumstances (i.e. out of your control). Missed classes and tutorials must be reasonably justified to your TA. In case of missed exams due to unforeseen circumstances, current university regulations will be followed.

Plagiarism

The University Academic Integrity Policy defines plagiarism as "presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own." This includes reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to: books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, artworks, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/software, material on the internet and/or conversations.

Examples of plagiarism include, but are not limited to:

- any submission prepared in whole or in part, by someone else, including the unauthorized use of generative AI tools (e.g., ChatGPT);
- using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another's data or research findings without appropriate acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one's own; and
- failing to acknowledge sources through the use of proper citations when using another's work and/or failing to use quotations marks.

Plagiarism is a serious offence that cannot be resolved directly by the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course.

Statement on Student Mental Health

As a university student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you.

Emergency Resources (on and off campus): https://carleton.ca/health/emergencies-and-crisis/emergency-numbers/

Carleton Resources:

- Mental Health and Wellbeing: https://carleton.ca/wellness/
- Health & Counselling Services: https://carleton.ca/health/
- Paul Menton Centre: https://carleton.ca/pmc/
- Academic Advising Centre (AAC): https://carleton.ca/academicadvising/
- Centre for Student Academic Support (CSAS): https://carleton.ca/csas/
- Equity & Inclusivity Communities: https://carleton.ca/equity/

Off Campus Resources:

- Distress Centre of Ottawa and Region: (613) 238-3311 or TEXT: 343-306-5550, https://www.dcottawa.on.ca/
- Mental Health Crisis Service: (613) 722-6914, 1-866-996-0991, http://www.crisisline.ca/
- Empower Me: 1-844-741-6389, https://students.carleton.ca/services/empower-me-counselling-services/
- Good2Talk: 1-866-925-5454, https://good2talk.ca/
- The Walk-In Counselling Clinic: https://walkincounselling.com

Academic Accommodations

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Academic consideration for medical or other extenuating circumstances

Students must contact the instructor as soon as possible, and normally no later than 24 hours after the submission deadline for course deliverables. Send an email explaining the circumstances and attaching medical notes or documentation if possible. You may also use the <u>Self-Declaration for Academic Considerations form</u>.

Students should also consult the <u>Course Outline Information on Academic Accommodations</u> for more information. Detailed information about the procedure for requesting academic consideration can be found here.

Pregnancy and Family-Status Related Accommodation

Please write to me with any requests for academic accommodation during the first few weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details about the accommodation policy, visit the Equity and Inclusive Communities (EIC) website.

Religious obligation

Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details <u>click here</u>.

Academic Accommodations for Students with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, please request your accommodations for this course through the Ventus Student Portal at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). Requests made within two weeks will be reviewed on a case-by-case basis. For final exams, the deadlines to request accommodations are published in the University Academic Calendars. After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: https://carleton.ca/equity/sexual-assault-support-services.

Accommodation for Student Activities

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation will be provided to students who compete or perform at the national or international level. Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf