

University of Toronto Scarborough
Department of Physical and Environmental Sciences
ESTB04 Addressing the Climate Crisis

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TA: Ichha Kaur Kohli

Time and Location: Tuesdays 2-4 pm, AC 223

Office Hours: TBD

1. COURSE DETAILS

Course description:

Addressing the climate crisis is a profound challenge for society. This course explores what climate change is and what people are doing about it. From unprecedented fires to flooding to ecosystem degradation to extreme temperatures, climate change is here. Climate change is exacerbating existing societal vulnerabilities and is having deep impacts across ecological and social systems. Greenhouse gas emissions are still going up and researchers have calculated that global greenhouse gas emissions need to reduce rapidly by 2030 and reach zero around mid-century in order to have a chance of avoiding dangerous climate change. Low carbon transitions and adapted systems are emerging, but too slowly. The urgency of the climate crisis has been recognized across society by municipalities declaring climate emergencies, nations signing the UN Paris Climate Agreement, and young people of the Fridays for Future movement advocating for ambitious climate action.

This course emphasizes the human dimensions of the climate crisis and introduces key concepts in climate science and policy, particularly the potential impacts on humans and the natural world and societal response measures to eliminate greenhouse gas emissions and adapt to the impacts of climate change. The first part of the course lays the foundations for addressing the climate crisis. After an introduction to the climate system and the scientific evidence for global warming, we will learn about the projected impacts of climate change and the danger of failing to take adequate action. We will also learn about the challenges and barriers standing in the way of effective action, particularly those related to climate change delay and denial. The second section of the course focuses on solutions. We will examine how society can eliminate greenhouse gas emissions through potential climate change mitigation actions. We will also learn about response measures that can help to reduce the impact of climate change, also called climate change adaptation. Finally, we will focus on taking action. The last section of the course covers the politics of climate action, avoiding despair and maintaining hope, and pursuing transformative change.

This course is intended for students from all backgrounds (science, social sciences, humanities) who are interested in understanding the human dimensions of the climate crisis and developing their ability to explain potential solutions.

Objectives:

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

- Describe the scientific evidence for climate change and projected impacts
- Understand and explain the barriers to effective response actions including climate change denial and delay
- Understand and explain issues of equity and justice related to the climate crisis and potential response measures
- Evaluate and communicate potential mitigation solutions to reduce and eliminate greenhouse gas emissions
- Evaluate and communicate potential adaptation solutions to reduce the impact of climate change

2. OVERVIEW

Course Schedule (see end of syllabus for further details)

Foundations

Week 1: Introduction: What kind of problem is climate change?

Week 2: Climate action in Canada + eco-anxiety

Week 3: Climate science 101 and predicting the future

Week 4: What's stopping us: challenges and barriers + talking about climate change

Solutions

Week 5: Mitigation measures: eliminating greenhouse gas emissions in energy and transportation

Week 6: Mitigation measures: eliminating greenhouse gas emissions in land use and tricky carbon

Week 7: Climate solutions in the world: case studies

Week 8: Adaptation measures: impacts on humans and ecosystems

Week 9: Adaptation measures: response measures, inequity, and vulnerability

Action

Week 10: The politics of climate action

Week 11: Hope

Week 12: Transformative change: decarbonization, disruption, and equity

Assignments (see end of syllabus for further details)

Assignment	Weight	Deadline
Participation – active participation and completion of a weekly reflection journal	10%	Feb 14 and Apr 4
Climate Change News Discussion Lead – each student will be assigned to one week to lead a discussion after presenting on a climate change news topic	10%	Various
Take-Home Quizzes – two quizzes will be completed as take-home assessments	20%	Jan 30 and March 13

Talking about Climate Assignment – talk to someone about climate change and write a report about the experience	20%	February 10
TED-style climate talk: draft script and references - articulate an “idea worth spreading” about a relevant climate topic	5%	March 21
TED-style climate talk: final - write a script and then bring it to life in a recorded video	35%	April 14

3. POLICIES AND EXPECTATIONS

Format

Classes are two-hours long and will include lectures, discussions, activities, and workshops. There is a course website on Quercus for announcements, readings, and course materials. Please check the course website frequently.

Handing in Your Assignments:

All assignments for this course must be submitted through **Quercus**. Paper copies of the assignments will not be accepted.

Extensions

Students must request an extension in ADVANCE of the deadline in order to receive a decision. Extensions beyond the examination period must be submitted via petition through the Office of the Registrar. Please follow the University of Toronto procedure to be completed in order to be considered for academic accommodation for any course work such as missed tests or late assignments.

Illness

Students who are absent from academic participation for **any reason** (e.g., COVID, cold, flu and other illness or injury, family situation) and who require consideration for missed academic work should report their absence using the online absence declaration on **ACORN** and on the **DPES** online form. The declaration is available on **ACORN under the Profile and Settings menu**. Students should also advise their instructor *of* their absence via the **DPES** online form. Visit [COVID-19 Information for University of Toronto Students](#) page on the Vice-Provost, Students website for information on this and other frequently asked questions.

Visit the UTSC [COVID-19 Absence Declaration in ACORN](#) website for more information.

Missed Term Work

Late assignments will be **subject to a late penalty of 2% per day (including weekends) of the total marks for the assignment**. Late assignments will only be accepted for one week after the deadline. The only exemption from these penalties will be for work that is late for health reasons, as long as students submit proper documentation by way of the Absence Declaration Tool on ACORN.

Email and Communication

I hold weekly office hours and I would be happy to meet with you during these times. You can also reach me by email, but please consider the following things:

- You are expected to write from your University of Toronto email
- Please come to my office hours for substantive discussions
- I will do my best to respond, but I don't respond to emails on evenings or weekends and may not be able to respond rapidly at all times.

Equity, Diversity, and Inclusion

The University of Toronto is committed to equity, human rights and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect where all members of our community can express themselves, engage with each other, and respect one another's differences. U of T does not condone discrimination or harassment against any persons or communities.

Assistance and Accommodation

There are many resources for students who need assistance, including academic resources and health and counselling services. The University also is committed to providing allowances for religious observances. If you need accommodation for any reason, please let me know. Here are a few resources you may find useful:

- <http://life.utoronto.ca/just-for-you/for-students-with-a-disability/>
- <http://www.accessibility.utoronto.ca/>
- <http://healthandwellness.utoronto.ca/>
- <http://www.writing.utoronto.ca/writing-centres>
- <http://uoft.me/religiousaccommodation>
- <https://www.sgs.utoronto.ca/gradlife/Pages/Grad-Wellness.aspx>
- <https://www.sgs.utoronto.ca/currentstudents/Pages/Writing-Centre.aspx>

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a consideration that may require accommodations, please feel free to approach me and/or the *AccessAbility* Services Office as soon as possible.

AccessAbility Services staff (located in Rm AA142, Arts and Administration Building) are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations 416-287-7560 or email ability.uts@utoronto.ca. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Writing Support

Please see English Language and writing support at University of Toronto:
<http://www.sgs.utoronto.ca/currentstudents/Pages/English-Language-and-Writing-Support.aspx>

Plagiarism and Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a university, and to ensuring that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of cheating and plagiarism very seriously. The [University of Toronto's Code of Behaviour on Academic Matters](#) outlines the behaviours that constitute academic dishonesty and the processes for addressing academic offences. Potential offences include, but are not limited to:

In papers and assignments:

- Using someone else's ideas or words without appropriate acknowledgement.
- Submitting your own work in more than one course without the permission of the instructor in all relevant courses
- Making up sources or facts
- Obtaining or providing unauthorized assistance on any assignment

On tests and exams:

- Using or possessing unauthorized aids
- Looking at someone else's answers during an exam or test
- Misrepresenting your identity

In academic work:

- Falsifying institutional documents or grades
- Falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes

All suspected cases of academic dishonesty will be investigated following procedures outlined in the *Code of Behaviour on Academic Matters*. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, please reach out to me. Note that you are expected to seek out additional information on academic integrity from me or from other institutional resources (for example, the [University of Toronto website on Academic Integrity](#)).

4. COURSE SCHEDULE

***Check Quercus for the most up-to-date reading list

Date	Class Topics and Materials	Assignments
FOUNDATIONS		
Week 1 Jan 10	Introduction to each other and the course. What could climate change mean to you, the places you love, your career? Course overview including assignments and approach. What kind of problem is climate change?	

	<p>Required before Class #2:</p> <ul style="list-style-type: none"> - Climate change in the news - <i>Watch this video:</i> https://www.youtube.com/watch?v=f52LJJFBCLc <p>OR read: Under the Weather by Ash Sanders (All we can save)</p> <ul style="list-style-type: none"> - <i>Read this:</i> - Ripple et al. (2020) World Scientists' Warning of a Climate Emergency https://academic.oup.com/bioscience/article/70/1/8/5610806#165912541 - UNEP Gap Report 2020 (Key Messages): https://wedocs.unep.org/xmlui/bitstream/handle/20.500.11822/34461/EGR20KM.pdf?sequence=17 	
<p>Week 2 Jan 17</p>	<p>Climate action in Canada</p> <p>Discussion: Eco-anxiety</p> <p>Required before Class #3:</p> <ul style="list-style-type: none"> - Climate change in the news - <i>Read this:</i> - Burch and Harris (2021) Chapter 2: Basic System Dynamics. Understanding Climate Change: Science, Policy, and Practice, Second Edition - <i>Watch this:</i> - https://crankyuncle.com/a-history-of-flicc-the-5-techniques-of-science-denial/ <p>AND Review at least five of climate change myths: https://skepticalscience.com/argument.php</p> <ul style="list-style-type: none"> - <i>Play this (OPTIONAL):</i> - Play the Cranky Uncle game: https://crankyuncle.com/ 	
<p>Week 3 Jan 24</p>	<p>Climate Science 101</p> <p>Predicting the Future</p> <p>Required before Class #4:</p> <ul style="list-style-type: none"> - Climate change in the news - <i>Read this:</i> - Hulme (2019) Chapter 1: Is climate change the most important challenge of our time? - Canadian Institute for Climate Choices: Net Zero by 2050 https://climateinstitute.ca/reports/canadas-net-%20zero-future/ - <i>Watch this:</i> - https://www.ted.com/talks/katharine_hayhoe_the_most_important_thing_you_can_do_to_fight_climate_change_talk_about_it?language=en 	<p>Take-Home Quiz #1 (due 11:59 Monday Jan 30)</p>

<p>Week 4 Jan 31</p>	<p>What's stopping us? Challenges and barriers</p> <p>Talking about Climate Change + Assignment</p> <p>Required before Class #5:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> - Burch and Harris (2021) Chapter 6: Climate Change Mitigation. Understanding Climate Change: Science, Policy, and Practice, Second Edition - <u>Watch this:</u> - https://www.ted.com/talks/tzeporah_berman_the_bad_math_of_the_fossil_fuel_industry?referrer=playlist-countdown_session_1_urgency#t-43825 - OR - https://www.youtube.com/watch?v=knkuWiSOg9c 	
SOLUTIONS		
<p>Week 5 Feb 7</p>	<p>Mitigation measures: eliminating greenhouse gas emissions (part 1)</p> <p>Required before Class #6:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> - MacArthur, J. L., Hoicka, C. E., Castleden, H., Das, R., & Lieu, J. (2020). Canada's Green New Deal: Forging the socio-political foundations of climate resilient infrastructure? <i>Energy Research & Social Science</i>, 65, 101442. - International Energy Agency Executive Summary (2021) https://www.iea.org/reports/world-energy-investment-2021/executive-summary - <u>Watch this:</u> - https://www.ted.com/talks/tara_houska_the_standi ng_rock_resistance_and_our_fight_for_indigenous_rights 	<p>Talking about climate change assignment due (11:59pm Friday Feb 10)</p>
<p>Week 6 Feb 14</p>	<p>Mitigation measures: eliminating greenhouse gas emissions (part 2)</p> <p>Required before Class #7:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> - IPCC 1.5 Summary for Policy Makers. https://www.ipcc.ch/sr15/chapter/spm/ - Bill McKibbin (2021) To counter climate change we need to stop burning things. https://www.newyorker.com/news/annals-of-a- 	<p>Submit your weekly reflection journal (11:59 Tuesday Feb 14)</p>

	<p>warming-planet/to-counter-climate-change-we-need-to-stop-burning-things</p> <ul style="list-style-type: none"> - <u>Watch this:</u> - TBD 	
Feb 21	READING WEEK	
Week 7 Feb 28	<p>Guest lecture</p> <p>TED-style Talk Assignment</p> <p>Required before Class #8:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> - Burch and Harris (2021) Chapter 9: Impacts of Climate Change on Natural Systems. Understanding Climate Change: Science, Policy, and Practice, Second Edition - Canada in a Changing Climate: Advancing our Knowledge for Action: https://changingclimate.ca (review of headline statements and executive summary) - <u>Watch this:</u> - https://www.ted.com/talks/colette_pichon_battle_climate_change_will_displace_millions_heres_how_we_prepare 	
Week 8 Mar 7	<p>Adaptation measures (part 1)</p> <p>Workshop: TED Talk idea discussions</p> <p>Required before Class #9:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> - Burch and Harris (2021) Chapter 10: Climate Change Impacts and Adaptation in Human Systems. Understanding Climate Change: Science, Policy, and Practice, Second Edition - <u>Watch this:</u> - https://www.ted.com/talks/hindou_oumarou_ibrahim_indigenous_knowledge_meets_science_to_take_on_climate_change?language=en 	Take-Home Quiz #2 (due 11:59 Monday March 13)
Week 9 Mar 14	<p>Adaptation measures (part 2)</p> <p>Script workshop + what makes a good TED talk?</p> <p>Required before Class #10:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> 	

	<ul style="list-style-type: none"> - Burch and Harris (2021) Chapter 11: Climate Change Policy and Governance. Understanding Climate Change: Science, Policy, and Practice, Second Edition - Rogelj, J., Geden, O., Cowie, A., & Reisinger, A. (2021). Net-zero emissions targets are vague: three ways to fix. <i>Nature</i>, 591(7850), 365–368. - <u>Watch this:</u> - https://www.ipcc.ch/sr15/multimedia/video/ OR: https://becauseipcc.thesuccession.ca/ - AND - https://www.youtube.com/watch?v=YJSehRIU34w 	
ACTION		
Week 10 Mar 21	<p>The politics of climate action</p> <p>Required before Class #11:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> - Brown (2021) “Our people have borne witness to climate change through deep time” https://climateinstitute.ca/publications/climate-change-through-deep-time/ - Bernstein, S., & Hoffmann, M. (2019). Climate politics, metaphors and the fractal carbon trap. <i>Nature Climate Change</i>. https://doi.org/10.1038/s41558-019-0618-2 - <u>Watch this:</u> - https://www.ted.com/talks/clover_hogan_what_to_do_when_climate_change_feels_unstoppable 	TED talk draft script and references due (11:59 pm Tuesday Mar 21)
Week 11 Mar 28	<p>Hope</p> <p>Required before Class #11:</p> <ul style="list-style-type: none"> - Climate change in the news - <u>Read this:</u> - O’Brien, K. (2018). Is the 1.5°C Target Possible? Exploring the Three Spheres of Transformation. <i>Current Opinion in Environmental Sustainability</i>, 31, 153–160. - <u>Watch this:</u> - https://www.ted.com/talks/greta_thunberg_the_disarming_case_to_act_right_now_on_climate_change 	
Week 12 Apr 4	<p>Transformative Change</p> <p>Script workshop</p>	Submit your weekly reflection journal (11:59 Tuesday Apr 4)

		<p>TED talk final script due (11:59 pm Friday April 14)</p> <p>TED talk recorded video due (11:59 pm Friday April 14)</p>
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5. ASSIGNMENTS

Participation	10%
Climate Change News Discussion Lead	10%
Take-home Quizzes	20%
Talking about Climate Assignment	20%
Final Assignment – TED-style video	40%

Participation (10%)

Learning in this course requires completing the readings, attending lectures, and engaging in class discussion and exercises. You must complete the readings each week before class. In class, students are expected to contribute to in-class discussions and activities. You will be called on from time to time to contribute your thoughts on a reading to group discussions. You are expected to contribute in thoughtful and constructive ways. Participation will be assessed through contributions during class (a range of participation formats are available and welcome in this course) and through a weekly reflection journal. Each week after class, you will complete a short reflection journal entry (maximum 100-150 words) on what you are learning this week. This is not a summary of content. Instead, consider answering questions like: What was I surprised to learn this week? What was most interesting to me this week? What new topic do I want to learn more about? What am I finding challenging? Your reflection journal will be marked twice during the semester.

Climate change in the news discussion lead (10%)

Every week, we will start class with a discussion about climate change topics that have been in the news over the previous week. You will be responsible for presenting a 3 minute summary of a climate change news topic one time during the semester and for taking a leading role in the subsequent discussion. At the beginning of the semester, you will be assigned to a particular week. Your summary will be oral (no Powerpoint slides) and should include: 1) summary of the news story, 2) how it relates to climate change, and 3) why this story matters to you.

Take-Home Quizzes (20%)

Two quizzes will be completed as take-home assessments.

Talking about Climate Change Assignment (20%)

One of the most important climate actions you can take is to talk about climate change. For this assignment, you will talk to someone about climate change and write a report about the

experience. Identify someone you would like to talk to (family member, friend, community leader etc.) and set a time for an interview (about an hour long). We will learn in class about how to develop interview questions. You will write a report (4 pages max) covering the questions and answers (2 pages) and your reflections on how it went and what you might do differently in the future (2 pages). Double spaced, 12-point font, use headers and subheading to define the sections.

Final Assignment – TED-style climate talk (40%)

Articulate an “idea worth spreading” about a relevant climate topic. Write a script and then bring it to life in a recorded video. (800 words, 5-7 minutes). Further details will be provided in class.

Final Assignment Task	Weight	Due Date
Draft script and reference list	5%	March 21
Final script and reference list	15%	April 14
Recorded video	20%	April 14