



## **ECON 383 Climate Economics**

**Winter Session: First Term, Sept-Dec 2022**

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**Office Hours:** Thursdays 14:00-15:30 and via appointment – please email.

**Lectures:** see online registration.

**Labs:** see online registration

**Teaching Assistant(s):** TBC

**Syllabus updated on:** August 31, 2022

### **Course Content**

Climate change is an economic problem. Climate change is driven by economic activity, while climate itself affects economic production (e.g. through impacts of temperatures or extreme events). Climate change also has a unique set of attributes that require economic analysis in order to devise effective solutions. It is also a global problem requiring unprecedented international cooperation. It is pervaded by uncertainty in every step of the process of translating global emissions into local damages. Above all, greenhouse gas emissions – the main driver of climate change – constitute a case where those responsible for the environmental impact do not face the true costs. And its damages are largely irreversible. This course focuses on disentangling the challenges of climate change, first providing a the physical-science background (and discussion of what makes climate science itself challenging). Subsequently, we will study the main economic drivers and challenges of climate change, from explaining the drivers of emissions, to externalities, public goods, and the problem of the global commons. The course will then look at the state-of-the art estimates of the economic impacts of climate change, and how (or if at all) avoided damages can be traded-off against the costs of mitigation. Finally, we will look at available policy options to mitigate and adapt to climate change, and their effectiveness as well as uncertainties surrounding them.

### **Learning Outcomes:**

In this course, students will gain an understanding of climate science, the economic drivers and challenges of climate change, the economic impacts of a changing climate and possible policy solutions. By the end of the course, you will be able to:

1. Understand and explain the basics of climate science, how greenhouse gases contribute to global climate change, and how climate projections are used in scenario analyses.
2. Communicate the main economic challenges and drivers of climate change to a lay audience.
3. Critically assess the economic impacts of climate change, how these are quantified, and what sources of uncertainty exist.
4. Apply a range of economic policy tools to tackle climate change and appreciate the effectiveness and drawbacks of these tools. Specifically, if presented with a particular climate policy, students will be able to quantify its impact in mitigating climate change and identify potential obstacles/challenges in the implementation of the economic policies.

## Delivery:

This course will be offered in person following UVic's guidelines. Students may be required to wear masks during lectures, labs, office hours, and exams (subject to public health guidelines). Online (Zoom) office hours may be offered by appointment.

## Textbooks & Software

**Textbook (optional):** There is no required textbook, however, the course will use material from Richard Tol's book on *Climate Economics* (Tol, 2019), and some parts of Charles Kolstad's *Environmental Economics* (2010). Additional reading will be provided.

Kolstad, C. (2010). *Environmental Economics*. 2<sup>nd</sup> Edition. Oxford University Press.

Tol, R. S. (2019). *Climate Economics: Economic Analysis of Climate, Climate Change and Climate Policy*. 2<sup>nd</sup> Edition. Edward Elgar Publishing.

**Software:** Please ensure you have access to (and are familiar with) Microsoft Excel to complete some of the in-class exercises and problem sets (either through lab computers or your personal devices). There will be in-class interactive activities that rely on web access. If you do not have a personal computer/cell phone that allows you to access the internet in class, please contact me via email to set up alternative arrangements.

## Assessment

The course is assessed through a final project, a midterm exam, problem sets, and in-class participation.

### Overall Grade Structure:

Final Project	45%
Midterm Exam	30%
Problem Sets	20%
Class Participation	5%

*Midterm Exam (30%):* The midterm exam will take place during term. No extensions will be granted on the midterm exam without formal documented illness or affliction (see policy on late assignments). If you miss the midterm exam entirely without documented illness or family affliction, you will receive 0% on the exam.

Note: All Material covered in lectures, problem sets, and relevant readings (provided during lectures or the reading list), may appear on the midterm exam, thus attendance in lectures and labs is highly encouraged. Attendance and course participation highly correlate with final course grades.

*Final Project (45%):* The final project is designed for you to apply economic analysis to a climate problem in practise. You will write an original research paper (max. 5 pages + references) on a topic relevant to the economics of climate change (more detail will be provided in class). Please make sure your final paper is written in the form of an academic essay (including proper citations). The research project constitutes independent work - you must reference any literature you cite and any data and methods you use.

The consequences of plagiarism range from a failing grade for an assignment or course to disciplinary probation or even expulsion from the university. Review "[What is Plagiarism](#)" for the definition of plagiarism. In the event of concerns about plagiarism or cheating, I reserve the right to examine students in person concerning their understanding of their submitted work and adjust their mark accordingly. See also the remarks below on plagiarism and cheating.

No extensions will be granted on the project without formal documented illness or affliction (see policy on late assignments). If the project is submitted late, 10% will be deducted per day past the due date. If you do not submit the final research project without documented illness or family affliction, you will receive an “N” for the course.

*Short Problem Sets (10%):* There are 4 problem sets designed to give you practise of thinking through and solving climate-economic problems. You may work in groups; but each student needs to submit their own copy of the assignment to Brightspace (and indicate who was in their group by including names and V-numbers of all group members). Answers have to be submitted by 4pm by uploading PDF versions of the answers to Brightspace (if you scan/photograph handwritten answers make sure they are legible and converted to PDF format). No extensions will be granted on the problem sets without formal documented illness or family affliction. A problem set that is not submitted or submitted late, will receive a grade of 0%. Please ensure you have access to Microsoft Excel to complete some of the in-class exercises and problem sets (either through lab computers or your personal devices).

*Class Participation (5%):* This course is designed to be interactive with in-class discussion and participation in experiments/games. Class participation will be assessed by active participation in activities, discussions, and during guest lectures (using Pass/Fail grading criterion), as well as random surveys of lecture attendance. To achieve full marks, you should actively participate in discussions/activities, attend both guest lectures, as well as attend the majority of lectures (defined as being present in at least 2/3 of the random lecture attendance surveys). There will be in-class interactive activities that rely on web access. If you do not have a personal computer/cell phone that allows you to access the internet in class, please contact me via email to set up alternative arrangements.

Essential Course Requirements: The final independent project must be completed to not receive an “N” on this course.

**Grading Scale:**

<b>Passing Grades</b>	<b>Percentage</b>	<b>Description</b>
A+	90-100	Exceptional, outstanding performance. Normally achieved by a minority of students. These grades indicate a student who is self-initiating, exceeds expectations and has an insightful grasp of the subject matter.
A	85-89	
A-	80-84	
B+	77-79	Very good, good and solid performance. Normally achieved by the largest number of students. These grades indicate a good grasp of the subject matter or excellent grasp in one or more areas balanced with satisfactory grasp in other areas.
B	73-76	
B-	70-72	
C+	65-69	Satisfactory, or minimally satisfactory. These grades indicate a satisfactory performance and knowledge of the subject matter.
C	60-64	
D	50-59	
<b>Failing Grades</b>		
F	0-49	Unsatisfactory performance. Wrote examinations and completed course requirements.
N	0-49	Did not complete course requirements by the end of term or session.

**Course Policies**

This course adheres to the [Department Course Policies](#) of the Department of Economics that deal with the following issues:

- Academic concessions
- Academic integrity (plagiarism and cheating)
- Attendance
- Grading
- Inclusivity and diversity
- Late adds
- Late assignments
- Repeating courses
- Review of an assigned grade
- Students with a disability
- Term assignments and debarment from examinations
- Travel plans
- Waitlists

The following policies are explicitly included because of their importance.

**Late Assignments and Missed Examinations**

Consideration for missed examinations or late assignments will be given only on the basis of documented illness (or in-line with the University’s policies at the time), accident or family affliction, and for no other reasons. In the event of a missed examination, students are advised to follow the procedures outlined in the University Calendar: [University Examination Policies](#)

Students are advised not to make work or travel plans during lecture hours to be able to attend all classes and examinations. There will be no special accommodation if travel plans conflict with examinations held during class hours or the December examination period. There will be no extensions for problem sets or the research project. For each day (beginning immediately after the deadline) the research project is submitted late, the grade will be reduced by 10% from the potential maximum. A problem set that is submitted late will count as not submitted.

### **Waitlist Policies**

- Instructors have no discretion to admit waitlisted students or raise the cap on the course.
- Students on the waitlist should discuss with the instructor how to ensure they are not behind with coursework in the event they are admitted.
- Registered students who do not show up in the first seven calendar days from the start of the course may be dropped from the course.
- Registered students who decide not to take the course are responsible for dropping the course, and are urged to do so promptly out of courtesy toward waitlisted students.
- Waitlist offers cease after the last date for adding courses irrespective of published waitlists.

### **Academic Integrity**

Academic integrity requires commitment to the values of honesty, trust, fairness, respect, and responsibility. Students are expected to observe the same standards of scholarly integrity as their academic and professional counterparts. Review "[What is Plagiarism](#)" for the definition of plagiarism. Note: Submitted work may be checked using plagiarism detection software. In the event of concerns about plagiarism or cheating, I reserve the right to examine students in person concerning their understanding of their submitted work and adjust their mark accordingly. This applies to all exams and submitted work, including problem sets, and the final project.

Students must abide by UVic academic regulations and observe standards of 'scholarly integrity,' (no plagiarism or cheating). This applies to all assignments and exams (take-home or otherwise). All online exams must be taken individually and not with a friend, classmate, or group.

All alleged violations of academic integrity will be investigated and a student who is found to have engaged in unethical academic behaviour, including the practices described in the [Policy on Academic Integrity](#) in the University Calendar, is subject to penalty by the University.

### **University Policy on Human Rights, Equity and Fairness**

The University is committed to promoting, providing and protecting a positive, supportive and safe learning and working environment for all its members. See [General University Policies](#)

### **Accessibility & Health Resources**

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, you are free to approach me; however, you must register with the [Centre for Accessible Learning](#) (CAL) for formal arrangements to be made. The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

[Health Services](#) - University Health Services (UHS) provides a full service primary health clinic for students, and coordinates healthy student and campus initiatives.

[Counselling Services](#) - Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students.

[Elders' Voices](#) - The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students, staff, faculty and administration in Indigenous ways of knowing and being.

### **Brightspace**

Brightspace is used extensively for the course. All students are expected to be fully functional with the system. The lecture material, problem sets, and labs will be posted in Brightspace. Please note that the lecture notes online are only outlines of the actual lectures, and additional material may be covered during the lectures. All announcements will be posted in Brightspace. Students are advised to check it frequently.

### **Course Experience Survey (CES)**

I greatly value your feedback on this course to continually improve the course and my teaching.

Informal early feedback: Early on during the lectures, I may distribute informal feedback forms to provide ongoing feedback on the instruction style. These will be anonymous and only used to improve teaching while the course is progressing.

Formal Experience Survey: Towards the end of term you will have the opportunity to complete a confidential course experience survey (CES) regarding your learning experience. The survey is vital to providing feedback to me regarding the course and my teaching, as well as to help the department improve the overall program for students in the future.

When it is time for you to complete the survey, you will receive an email inviting you to do so. If you do not receive an email invitation, you can go directly to the [CES log-in](#). You will use your UVic NetLink ID to access the survey, which can be completed on your laptop, tablet or mobile device. I will remind you nearer the time, but please be thinking about this important activity, especially the following three questions, during the course.

- What strengths did your **instructor** demonstrate that helped you learn in this course?
- Please provide specific ideas as to how the **instructor** could have helped you learn more effectively.
- Please provide specific suggestions as to how this **course** could be improved.

## **Course Schedule**

The tentative course structure and schedule is shown below. This is subject to change – check Brightspace for up-to-date topics and deadlines. Detailed reading list for each topic will be provided on Brightspace.

	<b>Topic</b>	
	Topic 1: Introduction to Climate Science	Weeks 1-3
	Science of Climate Change	
	Impacts & Projections	Sept. 19 <sup>th</sup> : Guest Lecture - Neil Swart (Environment Canada & Canadian Center for Climate Modelling and Analysis)
	Emissions	
	Topic 2: Environmental Economics	Weeks 4-8
	Competitive Markets	
	Market Failures: Externalities, Public Goods	
	Policy Instruments	
	International Cooperation	
	Topic 3: Optimal Climate Policy	Weeks 8-13
	Integrated Assessment & Cost-Benefit Analysis	
	Policy Evaluation	October 25 <sup>th</sup> : Guest Lecture – Kenneth Porter (BC Government)
	Technology and Adaptation	

- Final Project: due December 15<sup>th</sup>, 2022.
- Midterm Examination: Oct 31<sup>st</sup>, 2022 (during class time)
- Problem Sets: please see Brightspace for due dates. Due-dates may be adjusted to reflect course content covered in lectures.

All due dates and times refer to Pacific time.

## **Repeating Courses**

According to the University of Victoria Calendar <http://web.uvic.ca/calendar>

*“A student may not attempt a course a third time without the prior approval of the Dean of the Faculty and the Chair of the Department in which the course is offered unless the calendar course entry states that the course may be repeated for additional credit. A student who has not received this approval may be deregistered from the course at any point and may be asked to withdraw from his or her declared or intended program.”*

In order to request permission to attempt this course for the third time, you must follow the instructions provided under the link **Repeating Courses** at

<http://www.uvic.ca/socialsciences/economics/undergraduate/home/course%20policies/index.php>

Failure to obtain permission will result in deregistration from the course.

## **E-mail correspondence**

Emails should be limited to critical matters, such as inability to attend an exam, or prolonged illness, and should include the course name and number in the subject line. Questions on course material should be asked during office hours or in class. I will not respond to emails that can be answered using the course syllabus.