

Faculty of Science Course Syllabus
Departments of Economics and Physics & Atmospheric Science
ECON 2850/PHYC 2850 (CRN: 30110/30299)
Science and Economics of Climate Change
Summer 2020 – June 3 to 30 - 6 Credit Hours – On-Line Distance Course

Instructors: Ruth Forsdyke Email: ruth.forsdyke@dal.ca
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TA: Kuda Sakutukwa (economics section), kd629066@dal.ca

Lecture Slides and Videos: Posted on Brightspace every morning by 9 am

MiniAssignments: Posted on Brightspace every morning by 9 am and due the following morning at 9 am

Office Hours & Weekly Pre-test Tutorial: Brightspace Collaborate (video or chat meet – hour to be decided)

Ask a Written Questions: Use Brightspace Discussion Board or email.

TA (Kuda) Office Hours and Weekly Pre-test Tutorial: Brightspace Collaborate (hours to be decided)

Course Description

This course examines how climate change will impact the environment and human activities, and how to formulate and implement economically realistic solutions. It integrates the physical and biological science with economics to analyze the response options as we move to eliminate carbon emissions. The design and use of simple climate and economic models will be covered.

Course Prerequisites

ECON1101.03 or ECON1102.03 or any first year MATH or STAT course

Exclusions

PHYC2800.03, ECON2216.03

Course Objectives/Learning Outcomes

1. Understand the science behind climate change and the predicted impacts.
2. Understand how economists explain global warming as a social problem.
3. Examine mitigation and adaptation solutions that are scientifically and economically reasonable.
4. Practice applying microeconomics and environmental economics in the context of global warming.
5. Learn the use of a simple Integrated Assessment Model.
6. Be able to analyze media coverage of climate change.
7. Understand policy solutions to global warming, climate change, and ocean acidification.
8. Gain experience with working in a team to tackle climate change issues.
9. Learn critical thinking skills.
10. Improve numeracy skills with daily mini-assignments.

Course Materials

Course materials and lectures will be uploaded to the Brightspace course website.

Recommended Textbooks:

Science: Dire Predictions by Mann & Kump, 2nd Ed., Print ISBN: 9780133909777, 0133909778

eText ISBN: 9780134343143, 013434314X, can be purchased online (\$24 USD/180 days)

<https://www.vitalsource.com/referral?term=9780134343143>

Economics: Stern Review of the Economics of Climate Change by Nicholas Stern, available in Brightspace.

UN IPCC Summary for Policy Makers 5th Assessment Report (available in Brightspace)

UNIPPC Summary for Policy Makers Special Report on Global Warming of 1.5 degrees C (available in Brightspace)

Course Assessment - All done using Brightspace

Quiz 1 (Tues June 9)	10 %
Quiz 2 (Tues June 16)	10 %
Quiz 3 (Tues June 23)	10 %
Final Exam (Tues June 30)	20 %
Mini-assignments (due most weekdays by 9 am)	25 %
Group Project	
Written Proposal (Fri June 12)	2 %
Virtual Poster Presentation (June 24/25)	10 %
Written Report (Fri June 26)	10 %
Climate Change Conference (Fri June 26)	3 %
Project Total	25 %

Other course requirements

None

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale

A+ (90-100)	B+ (77-79)	C+ (65-69)	D (50-54)
A (85-89)	B (73-76)	C (60-64)	F (<50)
A- (80-84)	B- (70-72)	C- (55-59)	

Mini assignments

Mini assignments are short daily (each weekday) assignments that will be available by 9 am each morning and will be due within 24 hours (i.e. by 9 am the next morning). They are intended for you to do a quantitative exercise, calculation or reflection based on the lecture material given on that day. The science mini-assignments are located in the Assessment in Brightspace.

Group Project

For the group project you along with your group members will represent one country in the climate change conference simulation. As preparation you will produce a written report and a poster presentation. Each group will consist of 4 students and will be determined by June 8. The country you represent will be assigned after the groups are established. If you have a preference of who is in your group this must be submitted to the instructors before June 8. Details about the project is in Brightspace.

Course Policies

There are no make-up quizzes or exams. If there is a major medical issue preventing you writing a quiz or exam it will be dealt with on a case by case basis. Students requests for alternative times for final exams will be granted by request only under exceptional circumstances as described [here](#)

No late submissions will be accepted without prior approval.

Students are responsible for checking the Brightspace for Announcements, Course Information, etc.

Tentative Course Content, Schedule and Deadlines (Mini-Assignments Due 9 am most days)

June	#	Science	Economics
Week 1 – Concepts			
Wed 3	1	Environment – Economy Linkages Climate and Economic System Components IPAT & Kaya Identity Analysis Evidence of Climate Change Types of GHGs & sources, Climate Change as a Social Problem due to Externalities.	
Thur 4	2	Radiation & Energy Balance Greenhouse Effect & Surface Temper.	Markets & Welfare Analysis
Fri 5	3	Greenhouse Gases & Carbon Cycle Aerosols	Market Failure due to Externalities
Mon 8	4	Water / Clouds / Ice / Oceans	Policies to Correct the Market
Tue 9	5	QUIZ 1	QUIZ 1
		Planetary Energy Imbalance Climate Change & Radiative Forcing	Abatement Costs & Damage Framework
Week 2 - Models			
Wed 10	6		
		Feedbacks & Sensitivity	Abatement Costs/ Discounting Mechanics
Thur 11	7	Impacts, Damages & Monetization	
Fri 12	8	Integrated Assessment Models I	Integrated Assessment Models I
Mon 15	9	Integrated Assessment Models II	Integrated Assessment Models II
Tue 16	6	QUIZ 2	QUIZ 2
Week 3 – A New Future			
Wed 17		Steady-State Economy	Short Term Macroeconomics/ Green New Deal
Thur 18	12	Energy Demand Alternative Energy Sources	Cap and Trade
Fri 19	13	Tipping Points	Cap and Trade
Mon 22	14	Adaptation vs Mitigation	Mitigation Policy Comparisons
Tue 23	15	QUIZ 3	QUIZ 3
		Geoengineering / Negative Emissions	Adaptation Policy/ Geoengineering
Week 4 – Projects and Wrap-up			
Wed 24	16	Project Day 1: Student Presentations	
Thur 25	17	Project Day 2: Student Presentations	
Fri 26	18	Project Day 3: Climate Change Treaty Negotiations	
		Written Report Due	
Mon 29	19	Summary	Summary
Tue 30	20	FINAL EXAM	FINAL EXAM

University Policies and Statements:

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

Statement: <http://www.dal.ca/cultureofrespect.html>

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit the office (Rm 3037, McCain Building), e-mail (elders@dal.ca) or leave message (902-494-6803).

Information: https://www.dal.ca/campus_life/communities/native.html

Important Dates in the Academic Year (including add/drop dates)

https://www.dal.ca/academics/important_dates.html

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Student Resources and Support

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: <https://www.dal.ca/faculty/science/current-students/academic-advising.html>

Aboriginal Student Centre: https://www.dal.ca/campus_life/communities/native.html

Black Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: <https://libraries.dal.ca/>

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html **Studying for**

Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html **Copyright Office:**
<https://libraries.dal.ca/services/copyright-office.html>

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

Other supports and services

Student Health Services: https://www.dal.ca/campus_life/health-and-wellness/health-services/services.html

Counselling: https://www.dal.ca/campus_life/health-and-wellness/counselling.html

Student Advocacy: <https://www.dsu.ca/services/community-student-services/student-advocacy-service>

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Scent-Free Program: <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>