ECO313 - Environmental Economics
Fall 2011 Schedule
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- Office hours
- How we marked your HW

Objectives and Requirements:
This course investigates the economics of global warming. The problem of climate change can be usefully formulated as a very simple economics problem. There is a tradeoff between consumption and climate. We have preferences over climate and consumption. We'd like to choose our optimal climate/consumption bundle. This course is organized around filling in the details required to make the model useful and then using the model to investigate optimal policy responses.

The first half of the course will be devoted on developing an understanding of the facts that confront us. This part of the course will require a familiarity with basic statistics and an ability to manipulate data in a spreadsheet or statistical software. The second half will investigate policy responses to the facts established in the first part. This part of the course will require familiarity with microeconomics and basic calculus. In particular, you will be expected to be familiar with the material from intermediate microeconomics and be able to solve univariate and simple multivariate optimization problems.

Prerequisites:

- ECO200Y1/ECO204Y1/ECO206Y1,
- ECO220Y1/ECO227Y1/(STA247H1,STA248H1)/(STA250H1,STA255H1)/(STA257H1,STA261H1)

The University and the Economics Department enforce prerequisite requirements strictly. Students enrolled in courses for which they do not have the published prerequisites may have their registration in those courses cancelled at any time without warning. If you are unsure whether you satisfy the prerequisites, please check with our undergraduate secretary, Ms. Robbie Innes. Note that the University does not allow me to waive prerequisites.

Lectures: There are two sections of this course. The first usually meets on Mondays from 1-3 pm in ES B142. The second usually meets on Wednesdays from 1-3pm in RW 117. The exact dates of lectures are indicated on the schedule below. Note that the Monday section misses a few lectures early in the term and so the two sections will not proceed at the same pace.

Required Texts: .

- The Economics of Climate Change: The Stern Review, N. Stern, Cambridge University Press 2008.
- Storms of my grandchildren, J. Hansen, Bloomsbury, 2009.
- A Question of Balance, W. Nordhaus, Yale University Press, 2008.

All should be available at the bookstore.

Grading: A final which will count 60%. It will be two hours long and will take place at a time to be arranged during the December exam period. Since this is a new course, past exams are not available.

There will also be approximately weekly problem sets. At random, at the beginning of four lectures (three plus a make-up) I will collect problems sets. The best three of these four will count for 40% of your grade. Problems sets will not be accepted after the lecture during which they are collected and will only be accepted at the lecture for which you are enrolled. If you need to miss class, you can hand in problem sets early to the economics receptionist.

If you are unhappy with your grade on a problem set, look at the solution set before you come to talk to me about it. If you want a problem set remarked, we willl generally remark the whole thing, with the possibility that your mark could go up or down.

The schedule allows for a make-up problem set, so you get to be sick once for free. If you miss a second problem set I may allow you to hand it in late. I will consider this on a case by case basis. Expect that I will require a doctor's note indicating that you were too sick to do the work or come to class.

Academic misconduct: Copying or plagarizing or other forms of academic misconduct will not be tolerated. Students caught engaging in these activities will be subject to academic discipline ranging from a mark of zero on an assignment to dismissal from the university as outlined in the academic handbook.

Email Policy: I will try to reply to email within 24 hours, except on weekends, according to the following policy:

- The question should require a `yes, or `no' answer, or at most a one (or two) sentence response (maximum). If it takes more then the question is too hard for email and you should come to office hours
- I will not answer emails that request information that can be found on this website. Check here first.
- I will not answer emails about grading. For that, you need to come to office hours.

I encourage you to provide course feedback by email.

Lecture and reading schedule: . The following is a tentative schedule for the material to be covered during the term. You should check this schedule at least weekly for updates and changes.

Announcements:

- Here is a pre-publication version of `Question of Balance' with some typos which you can use until the bookstore gets real books.
- Here is an online version of The Stern Report.

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Lecture	Date (section1/2)	Reading	Problems	Solutions
#1:Introduction, How to measure climate and CO2	Sept. 12/14	• Nordhaus, Ch 1 • Measuring Temperature - The 170 Year Record, J. Weaver, J. Braun, and W. J. Szlemko, climatethoughts.org • Ice cores and climate change, British Antarctic Survey, Sept 2010 • Paleoclimatology: the Oxygen Balance, NASA Goddard Space Flight Center • Hansen to p111 • Ice core video	Due Sept. 26/28	
#2: The relationship between atmospheric CO2 and climate	Sept. 19/21	• IPCC 2007, Physical Science Basis, TS2-5.3 • Hansen p112-71 • Stern review, Ch 3, 7,8.		
#3: CO2 emissions and atmospheric CO2	Sept. 26/28	• Finish Hansen	Due Oct. 3/5	
#4: Climate and future consumption I	Oct. 3/5	• The Impact of Global Warming on Agriculture: A Ricardian Analysis, Robert Mendelsohn, William D. Nordhaus, And Daigee Shaw, AER 1994 • Adapting to Climatic Challenges: A Progress Report on Studies of the Historical Evolution of Wheat Production, Alan Olmstead and Paul Rhode, unpublished, 2011		
#5: Climate and future consumption II	Oct. 17/12 Note: Section 1 skips week (thanksgiving)	Dell et al is difficult. Do your best, but don't expect to get it all. Just the first two pages of Roberts and Schlenker are required. • Nonlinear temperature effects indicate severe damages to U.S. crop yields under climate change, W. Schlenker and M. J. Roberts, PNAS September 15, 2009 • Climate Change and Economic Growth: Evidence from the Last Half Century, M. Dell, B. F. Jones and B. A. Olken, NBER Working Paper 14132 • Seasons of discontent, The Economist, August 27, 2011		
#6: Discounting, or how to compare present and future consumption	Oct. 24/19	• Dorfman and Dorfman, 1993, Chapter 19 . • An almost practical step toward sustainability, Robert Solow, An address to RFF (1993) • Nordhaus, p169-184		
#7: Abatement costs and (finally!)calculating the optimal mitigation path	Oct. 31/26	• Nordhaus Ch 2-5 This is a more technical version of Nordhaus' chapters 2-4. It's optional, but if you can do the math, it's easier to get through. • Rolling the `DICE': An optimal transition		

		path for controlling greenhous gases, W. Nordhaus, Resource andEnergy Economics (1993) These two are optional. Read them if you want to learn facts about mitigation. • Stern Ch 9-10 • IPCC 2007, Climate Change 2007: Mitigation of Climate Change, Summary for policy makers
#8: The tragedy of the commons	Nov.14/2 Note: Section 1 skips week	• The Tragedy of the Commons, G. Hardin, Science (1968) • The economic theory of a common-property resource: the fishery, H.S. Gordon, Journal of Political Economy (1954) These two are optional. The lectures are based in part on Cheung, Ostrom is stories about common property in reality. • The structure of a contract and the theory of a non-exclusive resource, S. N. Cheung, Journal of Law and Economics(1970) • Ch 4,5 Governing the commons, E. Ostrom, Cambridge University Press(1990)
#9: Taxes and quotas	Nov. 21/9	
#10: Taxes and quotas under uncertainty, tradable permits	Nov. 28/16	
#11: Pressure valve quotas, joint regulation of many pollutants, tax interaction effects	Dec. 5/Nov. 23	
#12: Biofuels, innovation, and summing-up	Dec. 6/Nov. 30	
	Exam schedule	