

AEM 6510 - Environmental and Resource Economics - Fall 2018
Tues/Thurs 2:55-4:10 Room: Warren 138

Instructor: Ivan Rudik

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Office Hours: Wed 12:45 - 2:15 or by appointment. Room: Warren 462.

Textbook: PERMAN AND "Markets and the Environment" by Keohane and Olmstead. A pdf version is available for free through the library.

Prerequisites: MATH 1110.

Course Description: Review of welfare economics, environmental externalities, and common property resources, and a survey of current environmental and natural resource policy.

Course Summary: The goal of this course is to investigate environmental, resource, and energy issues such as pollution, climate change, renewable energy, oil extraction, and electricity markets using your economic training.

Course Requirements: Students are expected to attend two 75 minute lectures per week for the entire semester, plus one out-of-classroom power plant visit. In addition, students are expected to prepare for class, prelims, and complete homework outside of class.

Grade Policy:

Prelims: 20% and 20%

Problem Sets: 20%

Literature review paper and presentation: 20%

Electricity Market Game 10%

OPEC Game 10%

Prelims: There will be 2 prelims. If you miss a prelim without an acceptable excuse you will receive a zero. If you have an acceptable excuse (these must be brought in beforehand except for sickness, injuries, accidents, etc) an alternative prelim will be scheduled. If you miss a prelim and do not notify me beforehand you must have a valid document (doctor's note, etc) explaining why you missed class and were not able to let me know before the missed prelim.

Problem Sets: You will have problem sets due about every 3-4 weeks. You may work in groups of up to 3 on problem sets. Problem sets may be turned in late with a penalty of 20% of that homework's grade for each day it is late. Problem sets are due at the *start* of class.

Literature review: You will have to do a literature review on an environmental, resource, or energy economics topic of your choice. In the last week of class you will give a short presentation of your review of the literature. Papers are due the last day of class. Please talk to me about potential topics. More details will be distributed in a few weeks.

Games: We will play two games during the course for credit. In the first game you will act as

an electricity generating firm in an electricity wholesale market. In the second game you will act as an OPEC country in oil markets. You will be graded on a combination of how well you do in terms of maximizing profit relative to your country or power plant portfolio's possible profit, on how sound your strategy is economically, and your contribution to the team. Each game requires a two page write up for each team. The write ups should broadly cover: the economics behind your initial strategy, what you changed about your strategy during the game, what you would have done differently if we played the game a second time, what you learned during the game (in terms of economics or the real world setting). More details will come at a future date. Attendance is mandatory during game days.

Readings: Some sections of the course have readings (available on the course blackboard). The lectures, quizzes, homeworks and exams will draw from these readings. Lecture notes will be posted online at the end of each section.

Power Plant Trip: We will go on a trip to the Cornell combined heat and power plant. Attendance is mandatory.

Class Attendance: Besides the power plant visit and games, class attendance is not explicitly required.

Grade Appeals: If you wish to appeal your grade on an exam, quiz or homework you must bring it to my attention, in writing, within 24 hours of when the prelim or problem set is returned. Grades brought to my attention after this will not be eligible for a grade appeal. I reserve the right to regrade the entire assignment and the new grade will be final.

Class Conduct: All electronic devices are prohibited.

Group Work: For problem sets, you may consult with me during office hours, other students, and/or teaching assistants. Problem sets can be done in groups of up to 2. You must complete prelims without help.

Important dates (tentative):

No class: October 9, November 22

Power plant trip: October 11

Prelim 1: September 27

Prelim 2: November 27

Grading Scale:

A: 92–100; A-: 90–91

B+: 88–89; B: 82–87; B-: 80–81

C+: 78–79; C: 72–77; C-: 70–71

D+: 68–69; D: 62–67; D-: 60–61

F: < 60

Course Outline and Readings: This is a tentative schedule of the topics we will cover and applicable readings. Dates and readings are subject to change. KO denotes excerpts from the Keohane and Olmstead textbook. All readings can be found on blackboard or from the library website. ¶ indicates required readings. † indicates more technical readings.

Aug 23, 28: Background and principles of environmental economics: incentives, policy design, pollutants

- KO Chapter 1
- Fullerton, Don, and Robert Stavins. 1990. “How Economists See the Environment.” ¶

Aug 30, Sep 4: Micro recap, efficiency and the environment, scarcity pricing: Supply, demand, marginal analysis, social vs private

- KO Chapters 2 and 4 ¶
- Bittman, Matt. 2014. “The True Cost of a Burger.”
- Mouawad, J., 2006. A Fast-Growing Independent Strikes Gold in Oil Refining. The New York Times. ¶
- Mouawad, J., 2008. Oil Refiners See Profits Sink as Consumption Falls. The New York Times. ¶
- Krauss, C., 2012. Oil Refinings Fortunes Rise. New York Times. ¶
- Cook, L. and Olsen, B., 2017. Hurricanes Stir Up Profits for Refiners. The Wall Street Journal. ¶

Sep 6, 11: Market failures: Public goods, externalities, tragedy of the commons

- KO Chapter 5 ¶
- Davis, Lucas. 2014. “The Cost of Global Fuel Subsidies.” ¶
- Davis, Lucas. 2015. “Raise the Gas Tax.”
- Martin, Richard. 2014. “For \$20 Million, a Coal Utility Bought an Ohio Town and a Clear Conscience.”

Sep 13, 18: Environmental quality, analysis, discounting: types of analyses, discounting

- KO Chapter 3 ¶
- Griffiths, Charles, et al. “US Environmental Protection Agency valuation of surface water quality improvements.” Review of Environmental Economics and Policy 6.1 (2012): 130-146.
- Dasgupta, Partha. “Discounting climate change.” Journal of risk and uncertainty 37.2-3 (2008): 141-169. ¶,†
- The Economist. 2014. “Valuing the Long-Beaked Echidna.”
- Roberts, David. 2012. “Discount Rates: A Boring Thing You Should Know About (with otters!)” ¶

Sep 20, 25: Energy and electricity markets: wholesale electricity markets, market power, pricing

- Borenstein, Severin. 2000. “Understanding Competitive Pricing and Market Power in Wholesale Electricity Markets.” ¶
- Griffin, James M. and Steven L Puller. 2009. “A Primer on Electricity and the Economics of Deregulation.” ¶
- Auffhammer, Maximillian. 2012. “Marginal vs. Average Generation: The Case of the Electric Car.”
- Borenstein, Severin. 2016. “Is Electricity Pricing Different from Real Markets? Should It Be?”

Sep 27: Prelim

Oct 2, 4: Electricity strategy game

Oct 11: Power plant trip

Oct 16, 18: Modeling pollution

- Coase, Ronald. 1960. “The Problem of Social Cost.” Journal of Law and Economics.

Oct 23, 25: Standards: uniform standards, performance standards, technology standards

- KO Chapters 8 and 9 ¶
- Goulder, Larry and Ian Parry, 2008. “Instrument Choice in Environmental Policy” Review of Environmental Economics and Policy 2: 152-174. ¶

Oct 30, Nov 1, 6: Taxes, Cap and Trade, Intensity Standards

- KO Chapters 8 and 9
- Portney, Paul R. 2003. “Market-Based Approaches to Environmental Policy.” ¶
- Weitzman, Martin. 1974. “Prices versus Quantities” The Review of Economic Studies, 41(4), 477-491. †
- Holland, Stephen P., Jonathan E. Hughes, and Christopher R. Knittel. ”Greenhouse gas reductions under low carbon fuel standards?” American Economic Journal: Economic Policy 1.1 (2009): 106-46. ¶,†
- Fowlie, Meredith. 2016. “Is Cap and Trade Failing Low Income and Minority Communities?”
- Newell, Richard G., and Kristian Rogers. 2006. “The Market-Based Lead Phasedown.” RFF DP 03-37.

NEW: Pollution Havens

NEW: Double Dividend

NEW: Integrated Assessment of Climate Change

Nov 8, 13: Non-renewable resources: resource extraction

- KO Chapter 6 ¶

- Livernois, John. "On the empirical significance of the Hotelling rule." *Review of Environmental Economics and Policy* 3.1 (2008): 22-41. ¶

Nov 15: OPEC game

Nov 20: Renewable resources: fisheries, forests

- KO Chapter 7 ¶
- Taylor, M. Scott. "Buffalo hunt: International trade and the virtual extinction of the North American bison." *American Economic Review* 101.7 (2011): 3162-95. ¶,†

Nov 27: Prelim

Nov 29, Dec 4: Literature presentations