Course Description

Environmental Economics (8545) considers the efficient and equitable use of society's scarce environmental resources. Environmental resources include; air, water, land, wilderness areas, parks, wildlife and genetic diversity, and other scarce ecological systems. Use of these resources will be considered from three perspectives: the market allocation, the optimal allocation, and government attempts to achieve a more efficient and equitable allocation. Environmental economics is a course in applied welfare economics and will consider externalities (particularly with respect to pollution) and the economic evaluation of amenities (recreational and environmental) in detail. Courses in environmental economics and natural resource economics both consider natural resources but differ in that natural resource courses have historically dealt with the intertemporal utilization of conventional renewable and nonrenewable natural resources such as fish, trees and minerals, whereas environmental courses have considered pollution and other environmental issues from a static perspective. This historical distinction is starting to blur.

Details

Review questions will be handed out for each section of the course. I strongly encourage you to write out answers to the review questions and discuss them with your classmates. You will want to form study groups.

There will be a comprehensive final which will constitute 35% of your course grade.

There will be N short exams during the term and your best (N-1) short exam scores will constitute 35% of your course grade. Use the review questions to study for these short exams.

Some of the short exams will be take-home and some will be group short exams. I will tell you in advance if a short exam is a group short exam. The group will work together and just turn in one short exam. Everyone in the group will get the same grade for that short exam. Group short exams are one incentive to work and study together.

There will be two papers, a term paper (5-15 pages - no more, 20% of your course grade), and a short paper (5 - 10 pages, 10% of your course grade) that discusses in detail the regulation of a particular pollutant or type of pollutant.

For the term paper, either choose some environmental problem and evaluate it in economic terms or analyze some theoretical issue in economics that has particular relevance to environmental economics. Please discuss your paper topic with me before you write your paper. The final copy of your paper will be due in my office three days before the final. If you get a preliminary version to me at least ten days before the due date, I'll provide you with editorial comments and suggestions that you can use to revise the paper. I particularly like papers on local issues, either this area or where you are from. Anyone and everyone has written a paper on global warming.
For the pollution/regulation paper, carefully read whatever you need to pertaining to your pollutant of choice and its regulation, including everything appropriate on the reading list. Make sure you have read the articles from Section III and the appropriate articles in Section IV- Pollution Policy in Practice, before you discuss your pollution paper with me. In the paper, briefly describe your pollutant and the relevant stylized facts, and then outline a policy or alternative policies for modifying the emission levels of your pollutant. Consider the policy or policies that you propose from an efficiency, equity and political feasibility perspective. One intent of this paper is to make sure you seriously consider regulation of pollution from a practical perspective, another is that you become moderately familiar with at least one type of pollution. In class we will not specifically cover all of the materials presented in section IV. The pollution paper is tentatively due in early April. We will firm up the date some in early March. I will soon give you a set of review questions for section IV. These questions will help you to focus in on important issues in regulation.

My office hours will on Wednesday from 8:30 to 10:15, Thursdays from 3:00 to 4:30, and by appointment. My office is Econ 122. Please feel free to call my office (492-6898) or home (444-1054) to leave a message. Sometimes it will take a day or so for me to get back to you. Leave a number where you can be reached, and a good times to call.

Prerequisites

Econ 8545 is the PhD level course in environmental economics. Econ 6070 or Econ 7010 (or permission of the instructor). The more prior knowledge of the following topics, the better: environmental economics (e.g., Econ 4545), natural resource economics (e.g., Econ 4535), micro theory, welfare economics, calculus, and math economics (e.g., 4/5808).

Textbooks and Additional Readings


I'll "distribute", for each section of the course, a set of the readings. You, as a group, can collectively keep them on file on the third floor, make and distribute copies, or whatever. If you wish or need to read ahead, you can borrow them from me.

ENVIRONMENTAL ECONOMICS: PRELIMINARY OUTLINE
(This is a preliminary list of readings so there will possibly be additions and/or deletions)

I. Putting Environmental Economics in Perspective
  1. Pearce and Turner, chapter 1: The Historical Development of Environmental Economics

II. Welfare Economics: A Review
  1. Morey, E.R., my welfare notes
2. Tietenberg, T., chapters 2, 3, and 4
   Chapter 2: Economics of the Environment: An Overview
   Chapter 3: Property Rights, Externalities and Environmental Problems
   Chapter 4: Regulating the Market: Information and Uncertainty

3. Read the appropriate chapters(s) in your graduate micro theory text on welfare
economics and market failure. For example, in Varian this material is
predominately in chapters 22 - 24.

III. The Valuation of Environmental Amenities
   A. Consumer Surplus and Economic Welfare
      1. Lecture notes on "Exact Consumer's Surplus Measures and Utility Theoretic
         Demand Systems: A Historical Review"
      2. Varian, H.R., Intermediate Microeconomics a Modern Approach Chapter
         15: Consumer's Surplus.
      3. Varian, H. chapter 7 (Utility Maximization) and chapter 10 (Consumer's
         Surplus) in Microeconomic Analysis, 3rd Edition.
         March 1984, 163-173.
      5. Koerner, E., "Putting a Value on Damaged Natural Resources," Resources
         No. 93, Fall 1988, 5-7.
         Economic Review 71 (4), September 1981, 715-725. You also might want
         to look at his reply in volume 74, 1984, pages 110-1102.
   B. Recreational Demand and Benefit Estimation
      1. Morey, E.R., "The Demand for Site-Specific Recreational Activities: A
         Characteristics Approach," Journal of Environmental Economics and
      2. "Characteristics, Consumer Surplus and New Activities: A
         Atlantic Salmon Fishing with Comparisons to Six Other Travel-Cost
         Models," American Journal of Agricultural Economics, Vol. 75 (3), August
         1993, pp. 578-592.
      3. Hanemann, M. and E.R. Morey, "Separability, Partial Demand Systems and
         Consumer's Surplus Measures," Journal of Environmental Economics and
         Discrete Choice Model and Count Data Model: Assessing Recreational Use
         Losses Due to Natural Resource Damage, discussion paper, MIT, January
         1993. This research was funded by Exxon for the litigation between Exxon
         and the State of Alaska.
   C. Contingent Valuation
      1. Freeman, A. M. chapter 5: Measuring Benefits from Nonmarket Data:
         Survey and Voting in Freeman, A.M., The Benefits of Environmental
         Improvement: Theory and Practice, Baltimore: Published for Resources for
         the Future by Johns Hopkins University Press, 1979. (Note that this
         material is a good introduction to contingent valuation, but keep in mind
that it is quite dated.)


5. "Pollsters Enlist Psychologists in Quest for Unbiased Results," NYT, September 7, 93.

6. Three articles in Choices, 1993 (second quarter), on "Contingent Valuation and Passive Use Values"


D. Using Property Values and Labor Markets to Evaluate Environmental Amenities


E. Linking Stated Preference Models and Revealed Preference Models

1. Cameron, T., "

2. Lodder, T., and E.R. Morey, "Linking Observed Preferences and Stated
III. Pollution and Externalities: An Introduction

1. Morey, E.R., my notes on a general equilibrium model of industrial pollution.
3. Pearce and Turner, Chapter 2: The Circular Economy
7. Tietenberg, T., chapter 14: Economics of Pollution Control: An Overview.

V. Pollution Policy in Practice

1. Tietenberg, T., chapter 14: Economics of Pollution Control: An Overview

A. Stationary Source Local Air Pollution
1. Tietenberg, T., chapter 15: Control of Stationary-Source Local Air Pollution

B. Regional and Global Air Pollutants
1. Tietenberg, T., chapter 16: Regional and Global Air Pollution: Acid Rain & Atmospheric Modification.
2. Harrington, W., "Breaking the Deadlock on Acid Rain Control," Resources
No. 92, Fall 1988, 1-4.

C. Mobile Source Air Pollution
1. Tietenberg, T., chapter 17: Control of Mobile Source Air Pollution.

D. Water Pollution
1. Tietenberg, T., chapter 18: Control of Water Pollution.

E. Toxic Waste
1. Tietenberg, T., chapter 19: Toxic Substances

F. Distributional Issues

VI. The Dynamic Utilization of Scarce Ecological Resources
A. Sustainability
Economics of Natural Resources and the Environment, 1990.

10. Tietenberg, T., chapter 22: The Quest for Sustainable Development

B. Soil Depletion, Desertification and Deforestation
1. McConnell, T.
2. Morey, E.R.

C. Extinction
1. Brown, G.

VII. Externality Theory

The readings in this section relate how externality theory has evolved. Page (1973) and Mishan (1971) are reviews of the literature. Pigou is responsible for the "Pigouvian tax correction" for externalities. Coase (1960) argues that the "Pigouvian tax solution" is misguided. The debate continues. You will find these readings, brilliant, insightful, often confusing, sometimes wrong, and always thought provoking. The investment in this material is well worth the effort.

A. Pre-Coase
1. Pigou, A.C., Chapter 8, page 194 - the Road Example in the Economics of Welfare (1st edition)

B. Coase and After