SYLLABUS: Economics of the Environment

Time  MW 10:05-11:20

Location  113 Social Sciences

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Office Hours  TBA

Course Summary

This class will focus on the role of the environment in the theory and practice of economics. It will make use of microeconomic and statistical analysis at the intermediate level and will incorporate real-world examples. The class will be divided into three parts. Part I will cover the ways in which markets fail to efficiently allocate resources in the presence of pollution along with the policies that are used to correct those failures. Part II will focus on the empirical techniques used by economists to put values on environmental commodities. Knowing these values is a precondition for properly applying the policies described in Part I. Part III will focus on topics in natural resource economics and sustainability.

Prerequisites

Required: Econ 201D
Recommended: One course in statistics

Requirements

The following are required for successful completion of the course: (1) a set of short problem sets and writing assignments covering concepts presented in class, (2) a group empirical project in which you will implement a non-market valuation technique,¹ (3) a short (two-part) paper on hydraulic fracturing for shale gas extraction, (4) a midterm exam, and (5) a final exam. We will also have a number of in-class activities that are intended to keep things from getting boring. These sorts of activities generally work best if everyone comes prepared and participates. There will also be opportunity for participation in the course of normal lectures. Class participation will be used to decide borderline grades.

¹ For this requirement, students will make use of basic econometric methods. The techniques required to implement these methods will be covered in class.
Grading

Grades will be determined based on the following allocation:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Problem Sets/Short Writing Assignments</td>
<td>20%</td>
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<tr>
<td>Fracking Paper (2 parts)</td>
<td>20%</td>
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<tr>
<td>Group Empirical Project</td>
<td>20%</td>
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<tr>
<td>Midterm Exam</td>
<td>20%</td>
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<tr>
<td>Final Exam</td>
<td>20%</td>
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Attendance

Attendance will not be tracked and you are not required to inform the instructor when you will miss a class. Please find out (either from the instructor or another student in the class) what you missed and get the relevant notes. Powerpoint slides are posted on the course Sakai site.

Do let the instructor know if you are going to miss class on the day of a scheduled in-class activity or on the date of the midterm exam. It is important to have a headcount when planning an in-class activity, and we can arrange a make-up time for the midterm exam if it is an excused absence (e.g., sickness, varsity athletics). We can also work around absences caused by job interviews.

The final exam will be held during the normal exam period at the time designated by the Registrar. You should keep this in mind when purchasing airline tickets.

Late Assignments

Due dates for assignments are posted on the syllabus. Late work will be accepted, but an appropriate penalty will be imposed based on how late it is. Please plan ahead and complete assignments on time.

Readings

The required textbook for the class is

- Keohane and Olmstead, Markets and the Environment (Island Press, 2007)

It is available at the Duke Bookstore and can also be purchased on Amazon.com. Two additional required readings are:

- South Pole Carbon Asset Management – Going for Gold? Harvard Business School Case Study No. 9-709-030

These will be made available through the Harvard Business School’s web page (details provided in class).
There will be other readings (some required and some optional) presented throughout the semester on the course Sakai page.

Another source of **optional** readings is:

- Field and Field, Environmental Economics: An Introduction (McGraw Hill – Irwin)

This book is considerably more expensive. A copy will be placed on reserve at Perkins Library.

**Part I – Market Failures and Pigouvian Policy**

(1) **Introduction: What is Environmental Economics (1/8)**

- Keohane and Olmstead, Chs. 1 & 4
- Field and Field, Ch. 4 (pp.63-69)

(2) **Externalities (1/13)**

- Keohane and Olmstad, Ch. 2 (pp.11-27), Ch. 5 (pp.65-76)
- Field and Field, Ch. 4 (pp.69-81)

(3) **Pigouvian Policy (1/15, 1/22, 1/27)**

- Keohane and Olmstead, Ch. 8 (pp.129-140, 150-151), Ch. 9 (pp.153-161)
- Field and Field: Chs. 10 (pp.193-200, 204-208), 11 & 12

*Short Paper (Part #1):  Costs and Benefits of Fracking (Due 1/29)*
(4) Decentralized Approaches (Information, Voluntary Compliance, and Liability) (1/29)

  • Richardson. “US Oil Spill Law.” *RFF Policy Backgrounder*.

*Starkist (A). Harvard Business School Case Study No. 9-794-128. (2/3)*

(5) Coase Theorem (2/5)

  • Keohane and Olmstead, Ch. 8 (pp.125-129)
  • Field and Field: Ch. 10 (pp.200-204)

(6) Uncertainty (2/10)

  • Keohane and Olmstead, pp.143-150
  • NERC Podcast

(7) Discounting (2/12)

  • Keohane and Olmstead, Ch. 2 (pp.27-30)
  • Stern, N. “Stern Review: The Economics of Climate Change.” *Executive Summary*.
  • Nordhaus, W. “A Question of Balance: Weighing the Options on Global Warming Policies.”
  • Nordhaus, W. “The Stern Review on the Economics of Climate Change.”
  • Field and Field, Ch. 6 (pp.121-126)

(8) International Agreements (2/17)

  • Field and Field, Ch. 21 (pp.456-468)

*Short Paper (Part #2): Fracking Policy Options (Due 2/19)*

*In-Class Emissions Trading Exercise (2/19)*
(9) Heterogeneity and Tradable Permits (2/24)

- Keohane and Olmstead, Ch.9 (pp.162-168, 173-181), Ch.10 (pp.182-190)
- Field and Field, Ch.13

(10) Free-Lunches: The Double Dividend and Porter Hypotheses (2/26)

- Keohane and Olmstead, Ch.8 (pp.150-151)

(11) Tragedy of the Commons (3/3)

- Keohane and Olmstead, Ch.5 (pp.76-82)

Midterm Exam (3/5)

(12) Climate Change (3/17)


South Pole Carbon Asset Management. Harvard Business School Case Study No. 9-709-030 (3/19)

Part II – Non-Market Valuation

Empirical Group Projects Distributed (Due 4/23)
(13) Cost-Benefit Analysis and Sources of Value (3/24)

- Keohane and Olmstead, Ch.3
- Field and Field, Ch.6 (pp.115-128, 155-157)

(14) Hedonics (3/26)

- Kolstad, Ch.16 (pp.323-331)

(15) Travel Cost (3/31)

- Hanley, Shogren, and White, Ch.3 (pp.53-59)

(16) Stated Preference (4/2)

- Kolstad 18 (pp.355-364)

Part III – Resources and Sustainable Development

(17) Sustainable Development (4/7)

- Keohane and Olmstead, Ch.7 (pp.109-110), Ch.11
Exhaustible Resources (4/9)

• Keohane and Olmstead, Ch.6

Renewable Resources: Elephants and Ivory (4/14)

• Keohane and Olmstead, Ch.7 (pp.110-124)

Growth and the Environment (4/16)

• Levinson and Taylor (2006). “Unmasking the Pollution Haven Effect.”