

F&ES 733b – Economics of Pollution
Professor Erin Mansur
Spring 2006

Yale School of Forestry and Environmental Studies
Course F&ES 733b: Economics of Pollution

Class hours: Mondays and Wednesdays 10:00 – 11:20 AM in Bowers Auditorium

Course Syllabus

Overview

This course is designed to teach students how to think about managing pollution. It explains why market economies produce pollution and why regulations are needed. Social solutions to the problem are explored, and students learn how to analyze the effectiveness of control alternatives and policies. Specific examples are discussed, including air and water pollution, acid rain, global warming, hazardous waste, and human waste.

Office Hours and Teaching Assistants

Professor: Erin Mansur
Office location: 230 Prospect (Room 202)
Office hours: Mondays and Wednesdays from 2 to 3 PM.
Phone: (203) 432-6233
E-mail: Erin.Mansur@yale.edu
Class web site: <http://classes.yale.edu> (then FES 733)

Teaching assistants: Radha Kuppalli (radha.kuppalli@yale.edu)
Juliana Wang (qiong.wang@yale.edu)

TA office hours and location:

Radha Kuppalli, Mondays from 3 to 4 PM, 1st floor classroom of 380 Edwards
Juliana Wang, Tuesdays from 11 AM to noon, Basement #1 of 210 Prospect

TA review – Review of economic concepts and problem sets

Review hours and location:

January 11 and January 18 from 6:00 to 7:30 PM in Sage 24
Afterwards, Tuesdays from 5:30 to 7:00 PM in Sage 24

Readings

The class textbook is:

Scott J. Callan and Janet M. Thomas. 2004. *Environmental Economics and Management: Theory, Policy, and Applications (Third Edition)*. South-Western Publishers, Mason, OH. ISBN: 0324171811. 624 pages.

It provides an excellent review of important economics concepts in environmental economics.

Assignments

Understanding economics requires application. **Five problem sets** will be assigned. The questions will require direct application of concepts discussed in class as well as asking students to apply these concepts to new problems. Students are encouraged to work in groups of two or three to discuss strategy of problem solving. However, write-ups must be done *independently*.

In addition, there will be an 80 minute closed note, in-class **midterm exam** that will require application of the concepts learned in class. Finally, there will be a three-hour, comprehensive, closed note, in-class **final exam**. Both the midterm and the final exam are intended to be challenging and will require careful time management.

Professionalism is expected. Please be on time for class and turn off cell phones. No problem sets will be accepted late. No make up tests will be offered. If a student has an extenuating situation, he or she must contact the professor *before* the time of the exam.

Problem sets	25%
Midterm exam	30%
Final exam	45%

DUE DATES

Problem set	Topic	Date
1	Modeling Economic Problems	January 23
2	Modeling Solutions	February 1
3	Analytical Tools	February 20
4	The Case of Water	April 10
5	The Case Of Solid Wastes and Toxic Substances	April 19

COURSE PLAN AND READING LIST

I MODELING ENVIRONMENTAL PROBLEMS

January 9. Lecture 1. Materials Balance Model

Chapter 1: The Role of Economics in Environmental Management.

January 11. Lecture 2. Microeconomics 101

Chapter 2: Modeling the Market Process: A Review of the Basics.

January 16. Martin Luther King Day – No Classes

January 18. Lecture 3. Public Goods

Chapter 3: Modeling Market Failure.

January 20. Lecture 4. Externalities

(Friday class as a make up for MLK Day)

Chapter 3: Modeling Market Failure.

II MODELING SOLUTIONS TO ENVIRONMENTAL PROBLEMS

January 23. Lecture 5. Environmental Regulations and Efficiency

Chapter 4: Conventional Solutions to Environmental Problems: The Command-and-Control Approach.

Problem set 1 is due

January 25. Lecture 6. Cost Effectiveness of Standards and Pigouvian Taxes

Chapter 4: Conventional Solutions to Environmental Problems: The Command-and-Control Approach.

Chapter 5: Economic Solutions to Environmental Problems: The Market Approach.

Optional readings:

<http://www.ran.org/news/newsitem.php?id=1787&area=home>

[http://www.oilis.oecd.org/oilis/1998doc.nsf/LinkTo/ENV-EPOC-GEEI\(98\)35-REV1-FINAL](http://www.oilis.oecd.org/oilis/1998doc.nsf/LinkTo/ENV-EPOC-GEEI(98)35-REV1-FINAL)

January 30. Lecture 7. Technology Adoption and Cost Effectiveness of Taxes

Chapter 5: Economic Solutions to Environmental Problems: The Market Approach.

Optional reading:

Keohane and Olmstead. *Environmental and Natural Resource Economics: A Primer*, Chapters 2 and 3, on class web site

February 1. Lecture 8. Other Market-Based Instruments

Chapter 5: Economic Solutions to Environmental Problems: The Market Approach.

III ANALYTICAL TOOLS FOR ENVIRONMENTAL PLANNING

February 6. Lecture 9. Environmental Valuation

Chapter 6: Environmental Risk Analysis. (briefly)

Chapter 7: Assessing Benefits for Environmental Decision Making.

Problem set 2 is due

Optional reading:

Viscusi. "The Value of Risks to Life and Health," on class web site

Hanemann. "Valuing the Environment Through Contingent Valuation," class web site

February 8. Lecture 10. Environmental Costs

Chapter 8: Assessing Costs for Environmental Decision Making.

Optional reading:

American Electric Power "An Assessment of AEP's Actions to Mitigate the Economic Impacts of Emissions Policies," August 31, 2004, on class web site

February 13. Lecture 11. Benefit-Cost Analysis

Chapter 9: Benefit-Cost Analysis in Environmental Decision Making.

IV THE CASE OF AIR

February 15. Lecture 12. Air Quality Standards

Chapter 10: Defining Air Quality: The Standard-Setting Process.

Optional reading:

Burtraw *et al.* "Costs and Benefits of Reducing Air Pollutants Related to Acid Rain"
<http://www.rff.org/rff/Documents/RFF-DP-97-31-REV.pdf>

February 20. Lecture 13. Mobile Sources

Chapter 11: Improving Air Quality: Controlling Mobile Sources.

Optional reading:

Brown *et al.* "Reformulating Competition? Gasoline Content Regulation and Wholesale Gasoline Prices," http://repositories.cdlib.org/cgi/viewcontent.cgi?article=1102&context=are_ucb

Problem set 3 is due

February 22. Lecture 14. Stationary Sources

Chapter 12: Improving Air Quality: Controlling Stationary Sources.

Optional reading:

Stavins. "Vintage-Differentiated Environmental Regulation," class web site

Burtraw and Mansur. "The Environmental Effects of SO₂ Trading and Banking"
<http://pubs.acs.org/cgi-bin/article.cgi/esthag/1999/33/i20/pdf/es9902726.pdf>

February 27. Lecture 15. Midterm exam review session

March 1. In-Class Midterm Examination

March 6-15. Spring Break – No class.

March 20. Lecture 16. Ozone Depletion

Chapter 13: Global Air Quality: Policies for Ozone Depletion and Global Warming.

March 22. Lecture 17. Climate Change

Chapter 13: Global Air Quality: Policies for Ozone Depletion and Global Warming.

Optional reading:

<http://www.econ.yale.edu/~nordhaus/homepage/abrupt%20011998c.PDF>

Nordhaus "An Optimal Transition Path for Controlling Greenhouse Gases," class web site

V THE CASE OF WATER

March 27. Lecture 18. Clean Water Act

Chapter 14: Defining Water Quality: The U.S. Clean Water Act.

Optional reading:

Lyon and Farrow "An Economic Analysis of Clean Water Act Issues," class web site

March 29. Lecture 19. Point and Nonpoint Sources

Chapter 15: Improving Water Quality: Controlling Point and Nonpoint Sources.

April 3. Lecture 20. Safe Drinking Water Act

Chapter 16: Protecting Drinking Water: The U.S. Safe Drinking Water Act.

Optional reading:

<http://www.cato.org/pubs/regulation/regv24n3/specialreport.pdf>

VI THE CASE OF SOLID WASTES AND TOXIC SUBSTANCES

April 5. Lecture 21. Hazardous Waste

Chapter 17: Managing Hazardous Solid Waste and Waste Sites.

April 10. Lecture 22. Solid Waste

Chapter 18: Managing Municipal Solid Waste.

Problem set 4 is due

April 12. Lecture 23. Toxic Chemicals

Chapter 19: Controlling Toxic Chemicals: Production, Use, and Disposal

VII GLOBAL ENVIRONMENTAL MANAGEMENT

April 17. Lecture 24. Sustainable Development

Chapter 20: Sustainable Development: International Trade and International Agreements.

“Sustainability: An Economist’s Perspective” by Robert M. Solow (handout)

April 19. Lecture 25. International Trade and Class wrap-up

Chapter 20: Sustainable Development: International Trade and International Agreements.

Optional reading:

Yandle *et al.* “The Environmental Kuznets Curve: A Primer,” on class web site

Problem set 5 is due

Final exam Wednesday, May 3, 2006. 9 am to noon.