

Environmental Economics

Economics 380

Fall 09

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Office Hours: Monday: 2:30-5:00, W: 2:30-4:00, or by appointment

The historian J. R. McNeill writes in his book "*Something New Under the Sun*": "Environmental change on earth is as old as the planet itself, about 4 billion years. Our genus, *Homo*, has altered earthly environment throughout our career, about 4 million years. But there has never been anything like the twentieth century.... This is the first time in human history that we have altered ecosystems with such intensity, on such scale and with such speed.... In time, I think, this will appear as the most important aspect of the twentieth-century history..."

Goals: We will learn to apply economic concepts in order to (1) describe and analyze environmental problems and (2) predict the outcomes of environmental policies. We will study policies that rely on markets to change the behavior of firms and households. We will learn to evaluate and compare market-based policies to direct regulation. We will discuss the distributional implications of alternative policies versus the status quo.

Text: Keohane, Nathaniel O., and Sheila M. Olmstead (2007): *Markets and the Environment*, Island Press, Washington, DC. This syllabus includes the references to other books that I use to motivate and complement lectures.

Course Components:

- Lecture.
- Two midterm examinations and a cumulative final examination.
- Homework assignments.
- Presentation: The presentation should last no more than 20 minutes and be accompanied of PowerPoint slides. You must make an appointment in the Oral Communications Center to visit the Center at least 24 hours before the presentation. You must send me the

slides at least 12 hours before the presentation. Failing to meet these deadlines will affect your grade.

- Class participation

Late Work Policy: All assignments are due in class on the specified date. Each student is allowed one two-day grace period that allows you to turn in one assignment 48 hours late. Once you have exercised this option, you will not get credits for late assignments. Students cannot exercise this option for presentations and examinations.

Accommodations: I request that any student with a documented disability needing academic adjustments or accommodations speak with me during the first two weeks of class. Students have the responsibility for requesting accommodations and services. All discussions will remain confidential. Students with disabilities should also contact Allen Harrison, Associate Dean of Students for Diversity and Accessibility in the Office of the Dean of Students (Elihu Root House; ext. 4021) who coordinates services for students with disabilities. For more information on disability services: https://my.hamilton.edu/college/dean_of_students/accessibility/index.html

Tentative Exam Schedule:

Midterm Exam I: October 1 (in class)

Midterm Exam II: November 12 (in class)

Final Examination: Wednesday December 16, 7-10 PM.

Grading:

Midterm Exam I: 20 percent;

Midterm Exam II: 20 percent;

Final Exam: 25 percent (cumulative exam);

Assignments: 20 percent (each assignment has equal weight);

Presentation: 5 percent;

Class participation: 10 percent.

Classroom Behavior: Disruptive behavior in the classroom undermines the learning environment. Persistent speaking without being recognized or interrupting other speakers, behavior that distracts the class from the subject matter, being late, and bringing food to the class are examples of disruptive behavior. I do not allow the use of laptops in the classroom.

Other References

Scott J. Callan and Janet M. Thomas (CT) *Environmental Economics and Management*, fourth edition.

Charles D. Kolstad (2000): *Environmental Economics*, Oxford University Press.

Wallace E. Oates (Ed.) (1999): *The RFF Reader in Environmental and Resource Management*, Resources For the Future.

Roger Perman, Yue Ma, James McGilvray, and Michael Common (2003): *Natural Resource and Environmental Economics*, Pearson, Allison-Wesley, 3rd edition.

Clifford S. Russell, (2001): *Applying Economics to the Environment*, Oxford University Press.

Robert N. Stavins, Editor (2000): *Economics of the Environment. Selected readings*. Harvard University.

Thomas Sterner (2003): *Policy Instruments for Environmental and Natural Resource Management*, RFF Press.

Tom Tietenberg (2003): *Environmental and Natural Resource Economics*, 6th edition, Addison-Wesley.

Vig, Norman J., and Michael K. Kraft (eds.) (2000) *Environmental Policy*, CQ Press.

Schedule

This is a tentative schedule.

08-28: Topic 1
09-01: Topic 1
09-03: Topic 2
09-08: Topic 2
09-10: Topic 2
09-15: Topic 2
09-17: Topic 3
09-22: Topic 3
09-24: Topic 4
09-29: Topic 4

10-01: Midterm I: Topics 1-4 (in class)

10-06: Topic 5
10-08: Topic 5
10-13: Topic 6

FALL BREAK

10-20: Topic 6
10-22: Topic 6
10-27: Topic 6
10-29: Topic 7
11-03: Topic 7
11-05: Topic 8
11-10: Topic 8

11-12: Midterm II: Topics 5-8 (in class)

11-17: Topic 9
11-19: Topic 9

THANKSGIVING BREAK

12-01: Topic 10
12-03: Topic 10
12-08: Topic 10
12-10: Topic 10

Final Exam: Wednesday December 16, 7-10 PM. (The final examination is cumulative).

Topic Outlines

Lecture notes complement the chapters in the book

Topic 1: The Natural Environment and Economic Activity (Chapter 1)

- ❑ The Economy-Environment interdependence: Materials Balance Model and IPAT identity
- ❑ Global Change and Sustainability
- ❑ Behavioral challenges to environmental protection

Topic 2: How Economists Model Environmental Problems (Chapters 4&5)

- ❑ The Efficiency of Markets
- ❑ Market Failures
- ❑ Public Goods
- ❑ Externalities
- ❑ Tragedy of the Commons

Topic 3: Economic Efficiency and Environmental Protection (Chapter 2)

- ❑ Costs and benefits of pollution abatement
- ❑ Efficiency and the equimarginal rule
- ❑ Dynamic efficiency
- ❑ Discounting and intertemporal equity

Topic 4: Benefits and Costs of Environmental Protection (Chapter 3)

- ❑ Use and Nonuse Values
- ❑ Approaches for Measuring Environmental Benefits
 - Indirect methods: Revealed Preferences
 - Direct Methods
- ❑ Explicit and Implicit Costs; the Debate about Implicit Costs
- ❑ BC Analysis

Topic 5: Command-and-Control Environmental Policy

- ❑ Types of Standards:
 - Ambient

- Technology-based
- Performance-based
- Appraising standards:
 - Allocative Efficiency
 - Legislative constraints
 - Imperfect information
 - Regional differences
 - Nonuniformity
- Command-and-Control in practice

Topic 6: Market-Based Environmental Policy (Chapters 8 & 9)

- The Coase Theorem
- Policy Instruments
 - Pollution charge
 - Subsidy
 - Permit Trading System
 - Two-part Instruments
- Prices versus Quantities
- The case for market-based environmental policy
- The Politics of Policy Instruments

Topic 7: Environmental Policy: Air Quality (Chapter 10)

- Controlling Stationary Sources
- Controlling Acid Deposition
 - The Problem
 - Title IV, SO Allowance Program
 - Analysis of Allowance Market
 - Lessons from the Allowance Market

Topic 8: Environmental Policy: Global Air Quality

- Game Theory
- The Problem of Ozone Depletion
- The Problem of Global Warming

Topic 9: Environmental Policy: Other Market-Based Examples (Chapter 10)

- ❑ Fisheries: problems and management
- ❑ Water pricing and water quality trading
- ❑ Habitat and land management

Topic 10: Sustainability (Chapter 11)

- ❑ Sustainability: Definition and Elements
- ❑ The Environmental Kuznets Curve
- ❑ Green accounting
- ❑ Trade and the Environment
- ❑ Poverty and the Environment