

**Department of Resource Economics
University of Massachusetts-Amherst**

**RES EC 720: Environmental and Resource Economics
Fall 2009**

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Objective and requirements

Res Ec 720 is a graduate course intended to provide an introduction to the field of environmental and natural resource economics. It will cover the major areas of the field including: the economics of environmental policy, the use and conservation of forest, marine and mineral resources, and the valuation of environmental and resource assets.

There will be two exams and a 10-15 page term paper, each with equal weights. Exam dates will be announced in class, and the term paper is due on the last day of class. Your grade will also depend in part on class participation. At a minimum, you should plan to attend *every* class prepared to discuss the assigned readings.

Lectures

Tuesdays and Thursdays, 11:15-12:30, in Stockbridge 318

Readings

There will be readings assigned for each lecture that we expect you to complete prior to the meeting time. *In place of a required text we will provide you with a set of readings.* We also recommend that you familiarize yourselves with an undergraduate text like Tom Tietenberg's *Environmental and Natural Resource Economics* (fifth edition, 2000 or sixth edition, 2003). This text provides intuitive and graphical expositions of topics that we will explore more rigorously. Barry Field's *Environmental Economics* and *Natural Resource Economics* are also good undergraduate texts that you may find helpful. If you are considering pursuing research in environmental or resource economics, four advanced texts that cover central topics in detail are:

J. M. Conrad and C.W. Clark, *Natural Resource Economics: Notes and Problems*, Cambridge University Press, 1987.

A. Fisher, *Resource and Environmental Economics*, Cambridge Press, 1981.

Freeman, A.M., *The Measurement of Environmental and Resource Values*, Resources for the Future, 1993.

N. Hanley, J.S. Shogren and B. White, *Environmental Economics In Theory and Practice*, Oxford University Press, 1997.

An interesting and useful blog about environmental and resource economic issues is:
<http://www.env-econ.net>

Class Outline and Reading List

Readings marked with an (*) in the list below will be stressed and should be read prior to class. The reading list is also meant to serve as a partial bibliography should you wish to delve deeper into a particular topic. If you wish to go even further, please feel free to see me about additional readings. Any changes in this reading list will be announced in class.

I. Social Choice, Markets, and Market Failures (3 weeks)

- *Charles Kolstad. *Environmental Economics*. Oxford University Press, 2000. Chapters 3, 4, and 5.
- *Tom Tietenberg. *Environmental and Natural Resource Economics*. 1996. Fourth edition. pages 19-39.
- *Robert Solow. 1991. "Sustainability: An Economist's Perspective." Reprinted in *Economics of the Environment: Selected Readings*, R. Stavins (ed.), W.W. Norton and Company, New York.

II. Environmental Policy (2 weeks)

- *Charles Kolstad. 2000. *Environmental Economics*. Oxford University Press, 2000. Chapters 7, 8, and 9.

Enforcement of Environmental Policies

Clifford Russell. 2001. "Monitoring and Enforcement." In *Applying Economics to the Environment*. Oxford University Press.

In the Developing World

- Allen Blackman and Winston Harrington. 2000. "The Use of Economic Incentives in Developing Countries: Lessons From International Experience With Industrial Air Pollution." *Journal of Environment and Development* 9(1), 5-44.
- Clifford Russell. 2001. "Choosing Instruments of Environmental Policy in the Developing Country Context." In *Applying Economics to the Environment*. Oxford University Press.

III. Natural Resources

a. Nonrenewable Resources; Allocation, Scarcity and Management (2 weeks)

Basics

- *Anthony Fisher. "Chapter 2: Exhaustible Resources: The Theory of Optimal Depletion," in *Resource and Environmental Economics*. Cambridge University Press, Cambridge. 1981.
- Jeffrey Krautkraemer. "Nonrenewable Resource Scarcity," *Journal of Economics Literature*, December 1998, pp. 2065-2107.

Sustainability

Krautkraemer. "Nonrenewable Resource Scarcity," Section 6.

Energy

T. Tietenberg. 2003. Section to be assigned.

b.1. Renewable Resources: Forests (1 week)

Basics of Optimal Rotation

- *J. M. Hartwick and N. D. Olewiler, 1998, Chapter 10 in the Economics of Natural Resource Use.
- R.T. Deacon, "The Simple Analytics of Forest Economics," in R.T. Deacon and M.B. Johnson (eds.), *Forestlands, Public and Private*, Ballinger Publishing Co., 1984.
- Jon M. Conrad, "The Economics of Forestry," Chapter 4 in *Resource Economics*, Cambridge University Press, 1999.

Tropical forests

- Robert T. Deacon, "Assessing the Relationship Between Deforestation and Government Policy," *Journal of Environmental Economics and Management* 28(1), 1-18. 1995.
- Anthony Fisher and W. Michael Hanemann, "Valuation of Tropical Forests," in *The Environment and Emerging Development Issues*, v.2, Partha Dasgupta and Karl Goran Maler (eds.), United Nations University/World Institute for Development Economics Research (UNU/WIDER) Studies in Development Economics. Oxford and New York: Oxford University Press, Clarendon Press, 1997, pages 505-28.
- C.M. Peters, A.J. Gentry, and R.O. Mendelsohn, "Valuation of an Amazonian Rainforest," *Nature* 339, 655-656 (June 29, 1989).

b.2. Fisheries (2 weeks)

- *John Hartwick and Nancy Olewiler, *The Economics of Natural Resource Use. Second Edition*. 1998. Chapter 4.
- *Anthony Fisher. Chapter 3. Renewable Resources.

IV. Valuation (3 weeks)

Introduction to benefit/cost analysis and measuring willingness to pay

- *Field text, chapter 6 "Frameworks of Analysis"
- Hanemann, M. 1992. Preface to *Pricing the European Environment*, Stale Navrud (ed.). Scandinavian University Press.
- *Arrow, K.J. et al. "Is there a role for benefit-cost analysis in environmental, health, and safety regulation?" reprinted in Stavins, *Economics of the Environment: Selected Readings* (ed.) 2000.
- *Sassone and Schaffer, 1978. *Cost Benefit Analysis*, chapter 2.
- *NAS, 1996, *Cost Benefit Analysis*, chapter 6.

Valuation Methodology

- *Smith, "Nonmarket Valuation of Environmental Resources: An Interpretive Appraisal" *Journal of Economic Perspectives*, (reprinted in Stavins selected readings)
- *Hanley, Shogren and White, chapter 13.
- Murphy, et al. 2005. "A Meta Analyses of Hypothetical Bias." *Environmental and Resource Economics*, 313-325.

V. Case Studies (1 ½ weeks)

- *The Arsenic Controversy.
The Value of Visibility in the White Mountains of New Hampshire.
- *Asbestos Case Study.
Other to be assigned.