Environmental Economics: Theory and Application

ECON516/ACE516/ENVS511 Spring Semester 2009

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Class: MW 1:30-2:50pm
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General Information

Course Objective: This course will introduce students to the theory and application of economics to environmental problems and prepare them for analyzing issues in environmental economics and policy. It will focus on the design and analysis of cost-effective environmental policies and on methods for determining the value of environmental amenities.

Prerequisites: ECON 302 or equivalent and strong quantitative skills are the minimum requirements. ECON 502 or ACE 502 and 503 or equivalent courses and a background in econometrics are recommended.

Format: The course consists of lectures, lab sessions, student-led discussions, student presentations, and other assignments. To achieve the course objectives, active participation in class and timely completion of assignments are important. Each week students will be responsible to read a set of assigned papers and actively discuss them with the other students in class. There will be computer lab sections in room 29 in the basement of the ACES library during the semester. These will cover topics such as simple data manipulation, unconstrained and constrained optimization. Labs will use real-world data wherever possible and focus on developing student analytical and interpretive skills.

Course website: The website is *https://moodle.atlas.uiuc.edu/course/view.php?id=222*. You will need your NetID and password to access the website, as well as an enrollment key for your first login.

Topics

Three major topics are covered in this course:

1. **Theory of Externalities.** We will discuss the concepts and theory underlying policy design to address environmental externalities:

(a) **Basic Theory.** Including typology and mathematical specification of externalities.

(b) **Instruments to address externalities.** Including taxes, standards, tradable permits, and voluntary approaches.

(c) **Pigouvian vs. Coasian approaches.** The role of property rights and transaction costs.

(d) **Advanced Topics.** Including monitoring and enforcement, spatial heterogeneity, and the role of thresholds in determining policy choice.

2. **Valuation of Environmental Amenities.** We will discuss the theory underlying measurement of nonmarket values and the implementation of hedonic, travel cost, and contingent valuation methodologies.

3. **Economic Analysis of Environmental Policies.** We will discuss and analyze current policies for management of externalities in various media, with a focus on U.S. examples:

   (a) **Air.** Including the Clean Air Act, SO_X allowance trading, nonmarket valuation of air quality, transboundary air pollution, and global warming.

   (b) **Water.** Including the Clean Water Act, transboundary water pollution, water quality trading, common property extraction of groundwater, and surface water – groundwater interaction.

   (c) **Land.** Including CERCLA, nonmarket valuation of landfills and toxic cleanup, conservation easements, and biodiversity.

Requirements

1. **Exams.** There will be one midterm exam and a final exam. The final exam will be on Tuesday May 12 from 1:30 to 4:30 pm. For each exam, a list of potential questions will be distributed in class ahead of time. Exam questions will be taken and reproduced directly from this list.

2. **Homework Assignments.** Homework assignments are to be completed individually. These will include both analytical and computer-based simulation and optimization exercises.

3. **Summary Reports.** Five summary reports on suggested papers are to be completed by each student. The summary report for a paper must be submitted on the day that the paper is being discussed in class. Each report should include a discussion of the main points of the article and the presenter's perspective on it (for example, do you agree or disagree with the assumptions made in the paper, what are the flaws or strengths of the methodology used, what are the main results, and what is their significance for policy).

4. **Class Participation.** All students are expected to read the assigned papers ahead of time and to participate actively in class discussions.

Late penalty policy: Assignments and summary reports must be submitted by the due date for full credit. Late assignments may be submitted for half credit for up to forty eight hours after the due date. Assignments submitted more than forty eight hours after the due date will receive no credit.

Grading

Course grades will be assigned on the basis of total points earned during the semester:

Midterm Exam	15%
Final Exam	30%
Homework Assignments	45%
Summary Reports (5)	5%
Class Participation	5%

Any form of cheating or plagiarism will not be tolerated. Students should be familiar with Rule 33 of the *Code of Policies and Regulations Applying to All Students*. Cheating will result in failing this course and possible further sanctions.

Texts and Readings

There is no single textbook for the course. Many of the journal articles discussed are available at *http://www.jstor.org* or elsewhere online. Students may find the following books useful:

Hanley, N., Shogren, J.F., and White, B. 2007. *Environmental Economics In Theory and Practice*, 2nd Ed., Palgrave Macmillan, England.

Baumol, W.J. and W.E. Oates. 1988. *The Theory of Environmental Policy*, 2nd Ed. Cambridge University Press, Cambridge, England.

Freeman, A.M. III. 2003. *The Measurement of Environmental and Resource Values*, 2nd Ed. Resources for the Future, Inc., Washington, DC.