

**Nicholas School of the Environment and Earth Sciences**  
**Duke Environmental Leadership Program**  
**ENV 462 Economics of Environmental Management**  
**Course Syllabus Fall 2007**

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**Course instructor:**

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**Course Description:** This course will provide an economic perspective on the management of environmental resources. Conceptual topics to be emphasized include environmental externalities, market failure, market based regulation, public goods, sustainability, and benefit-cost analysis. Applications will focus on the role of price signals in energy choices, the management of renewable resource use over time, the use of economic incentives to encourage reductions in air and water pollution, and the political economy of environmental policy formulation. A case study will examine carbon trading and taxes to address climate change in a global environmental management context.

**Course Materials:** A variety of course materials, including announcements, readings, assignments, quizzes and online discussions will be accessed through the Blackboard course site. Students should check the course page on a regular basis, but at least three times each week. The textbook for the course is: Nick Hanley, Jason F. Shogren, and Ben White, *Introduction to Environmental Economics*, Oxford Press, 2001. A number of articles will also be assigned. These readings are available electronically through Duke's E-reserves and in a coursepack. All course slides and lectures will be posted on Blackboard.

**Course Communications:** Feel free to email the instructor or teaching assistant questions you have about the readings, lectures, assignments and other material. We will do our best to reply in 24-48 hours. In addition, there will be an ongoing discussion board called "Ask the Prof" where you can post questions to me that I will answer for the whole class. Further class communication will occur via periodic conference calls that anyone can join on an optional basis. If technologically possible, the conference calls will

be archived on the Blackboard site. In addition, we will use occasional conference calls to discuss group projects.

**Module Assignments:** Each module will have a written assignment. These assignments will consist of short essays and problems. You will have at least one week to complete each assignment. Assignments will be submitted through Blackboard's assignment feature.

**Group Projects:** You will be assigned to a team that will prepare an environmental policy briefing report for the Administration on a significant environmental issue (e.g. endangered species, automobile emissions, mercury pollution). The report should emphasize economic values and incentives. The report will be presented to the class during our meetings at the end of the semester. The oral report should be accompanied by a PowerPoint presentation. The written report, due on December 14, should be concise (no more than 10 pages, double spaced -12 point font, excluding tables and figures). The target audience should include political appointees, senior career staff at agencies, congressional staff, and journalists. The report should include the following:

- a brief summary of the key scientific dimensions of the issue
- a discussion of the economic values associated with the issue including a summary of empirical evidence from nonmarket valuation studies.
- an analysis of how economic incentives could be used to address the issue and the advantages and disadvantages relative to current approaches
- a set of recommendations for improved environmental management related to your issue

**Academic Integrity:** Student conduct related to this course is governed by the Duke Community Standard: "Duke University is a community dedicated to scholarship, leadership, and service and to the principles of honesty, fairness, respect, and accountability. Citizens of this community commit to reflect upon and uphold these principles in all academic and nonacademic endeavors, and to protect and promote a culture of integrity."

**Exam policies:**

Two exams will be administered, covering material in Parts 1 and 2 respectively. The exams will be open book, open notes and open course material. No other sources or individuals may be consulted during the exams. The exams will be given on September 22 and December 1 through Blackboard.

**Course Participation:** It is essential that students stay up to date on course material and participate on a regular basis in online discussions, conference calls, and team meetings. Note that full participation in the discussion boards is extremely important. Credit toward your discussion participation grade will be earned through discussion boards, conference calls, and contributions to team projects. A portion of your participation grade will be derived from other team members' evaluation of your contribution to the team project.

**Grading:** The final grade will be determined as follows:

First exam	20%
Module written assignments	20%
Second exam	20%
Class participation	20%
Case study projects	20%

**Course Outline:**

**Part I. Theory and Tools**

- Module 1. Economic and Environmental Systems
- Module 2. Markets, Property Rights and Externalities
- Module 3. Environmental Valuation and Benefit Cost Analysis

**Part II. Applications**

- Module 4. Energy Resources and Policy
- Module 5. Renewable Resource Management
- Module 6. Managing Environmental Pollution
- Module 7. Economics of Climate Change

**Course Schedule and Readings:**

DATE	MODULE	READINGS
	<b>PART 1: Theory and Tools</b>	
<b>On-Campus August 13-17</b>	<b>1. Economic and Environmental Systems</b>	Nick Hanley, Jason F. Shogren, and Ben White, <i>Introduction to Environmental Economics</i> , Oxford Press, 2001 (hereafter referred to as “Textbook”), chapter 1. Kenneth Boulding, “The Economics of the Coming Spaceship Earth,” in A. Markandya and J. Richardson, <i>Environmental Economics: A Reader</i> , St. Martin’s Press, 1992 Don Fullerton and Robert Stavins, "How Economists See the Environment." <i>Nature</i> , 395 (1998): 433-434.
<b>August 20-24</b>	<b>Break</b>	No assignments
<b>August 27 - September 7</b>	<b>2. Markets, Property Rights and Externalities</b>	Textbook, chapter 2. Don Fullerton, and Thomas C. Kinnaman, “Household Responses to Pricing Garbage by the Bag,” <i>American Economic Review</i> 86 (September 1996): 971-84

September 10-21	<b>3. Environmental Valuation and Benefit Cost Analysis</b>	Textbook, chapter 3 and 4 R. B. Palmquist, F.M. Roka, and T. Vukina, "Hog Operations, Environmental Effects and Residential Property Values, <i>Land Economics</i> , 73 (1997): 114-124. J.I. Eisen-Hecht and R.A. Kramer. "A Cost-Benefit Analysis of Water Quality Protection in the Catawba Basin." <i>Journal of the Water Resources Association</i> 38(2002): 453-465.
		<b>First exam (September 22)</b>
	<b>PART II. Applications</b>	
September 24-28	<b>4. Energy Economics and Policy</b>	Textbook, chapter 14 R.M. Newell, "What's the Big Deal about Oil? How We Can Get Oil Policy Right," <i>Resources</i> , Fall 2006, 6-9.
October 1-5	<b>Fall Break</b>	No Assignments
October 8-19	<b>5. Renewable Resource Management</b>	Textbook, chapter 10 J.N. Sanchirico and R.G. Newell, "Catching Market Efficiencies: Quota-Based Fisheries Management," <i>Resources</i> , Spring 2003, 8-11.
October 22 – November 2	<b>6. Managing Environmental Pollution</b>	Textbook, chapters 9 and 11 James Boyd, et al, "Trading Cases: Is Trading Credits in a Created Market a Better Way to Reduce Pollution and Protect Nature Resources? <i>Environmental Science and Technology</i> , June 2003, vol. 41, pp. 217-225.
November 5-16	<b>7. International Case Study: Economics of Climate Change</b>	Textbook, chapter 12 Intergovernmental Panel on Climate Change (IPCC), "Summary for Policymakers." in <i>Climate Change 2007: The Physical Science Basis</i> , (1-18), 2007. Nicholas Stern, <i>Stern Review on the Economics of Climate Change</i> , London, UK: Her Majesty's Treasury, 2006, executive summary. Robert O Mendelsohn, "A Critique of the Stern Report," <i>Regulation</i> , Winter 2006/2007: 42-46.
November 19-23	<b>Thanksgiving break</b>	No Assignments
		<b>Second exam (December 1)</b>
November 26 –December 14	<b>Preparation of Group Projects</b>	Written Group Project due on December 14
December 17 – 28	<b>Winter Break</b>	
January 3-8	<b>Presentation of Group Projects in Washington, DC</b>  <b>Capstone in-person discussion – Can Economics Contribute to a Sustainable Future?</b>	Readings for capstone discussion: Textbook, chapter 15