ENVIROMENTAL STUDIES/ECONOMICS 55:  
NATURAL RESOURCE & ECOLOGICAL ECONOMICS

Winter 2009  
Prof. Richard B. Howarth  
Tutor: Caitlin Pierce ‘09

Lecture: MWF 10:00-11:05  
Office hours: Tu 1:00-3:00  
Office hours by appointment

X-hour: Th 12:00-12:50  
106 Fairchild, 646-2752  
107A Fairchild

Classroom: Carpenter 13  
RBHowarth@Dartmouth.edu  
Caitlin.Pierce@Dartmouth.edu

Course Description: This course examines the use of economic concepts and methods in the management of natural resources and ecological systems. Topics including welfare economics, common pool resources, nonmarket valuation, and discounting procedures are developed and applied to problems such as fisheries management, forest management, and biodiversity conservation. The course explores the links between economic growth, resource depletion, and global environmental change and the use of economic and ecological indicators in measuring and achieving sustainable development. Emphasis is placed on both the disciplinary aspects of economic analysis and the role of economics in interdisciplinary problem-solving.

Prerequisites: The course is aimed at students who have a basic knowledge of environmental issues (Environmental Studies 2 or 3), microeconomics (Economics 1), and good math skills (Mathematics 3). While students with weaknesses in one of these areas can succeed in the course, a grasp of either basic economics or calculus is essential.

Course Requirements: Course evaluations will be based on four homework assignments (10%), a midterm (30%), a final examination (30%), and a 6-8 page paper that will be due on Friday, March 6 (30%). Papers will summarize and critique a research article that is pertinent to the themes explored in the course. See the “Guidelines for Final Papers” on p. 5 below.

Readings: The textbook for this course is Eban Goodstein’s Economics and the Environment (5th edition, John Wiley, 2008). Older versions of the textbook are also OK. Both the text and a supplementary reader are available for purchase at Wheelock Books. Copies will also be placed on reserve in the Environmental Studies library in 108 Fairchild.

Disabilities: Students with learning, psychological, or physical disabilities should contact the instructor after class or during office hours to discuss the accommodations they require to succeed in the course.

Academic honor: Students may discuss assignments with each other provided that the work they submit for credit is their own. For a math problem, this means that a student should understand each step involved in the solution and be able to reproduce it independently. Papers must be written by the student and reflect his or her own interpretation of the subject matter. Under Dartmouth’s Academic Honor Principle, it is impermissible to give or receive assistance during an examination.
### Class Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>M 1/5</td>
<td>Introduction/overview</td>
<td>Goodstein, ch. 1</td>
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<tr>
<td>W 1/7</td>
<td>Economics, ethics, and policy analysis</td>
<td>Goodstein, ch. 2</td>
</tr>
<tr>
<td>M 1/12</td>
<td>Market failure</td>
<td>Goodstein, ch. 3</td>
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<tr>
<td>W 1/14</td>
<td>Property rights and missing markets</td>
<td>Goodstein, ch. 4</td>
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<tr>
<td>F 1/16</td>
<td>Externality theory <em>(Homework #1 due)</em></td>
<td>Goodstein, ch. 5</td>
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<tr>
<td>M 1/19</td>
<td><em>No Class – MLK Day</em></td>
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<tr>
<td>Th 1/22</td>
<td>Working with Excel (optional X-hour)</td>
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<tr>
<td>M 1/26</td>
<td>Cost-benefit analysis</td>
<td>Goodstein, ch. 8</td>
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Valuing ecosystem services

Income and well-being
Reading: Goodstein, ch. 11

Critiques of cost-benefit analysis

Midterm examination

Discounting and natural capital

Nonrenewable resources

Discounting and conservation (X-hour)

No Class – Winter Carnival

Critiques of discounting

“Limits to Growth”? (Homework #3 due)

Economic sustainability
M 2/23 Resource scarcity and industrial ecology  
   Guest lecturer: Mike Gerst, Thayer School of Engineering  
   Reading: TBA

W 2/25 Natural resource accounting  
   Reading: Goodstein, ch. 6

F 2/27 Net national welfare (Homework #4 due)  

M 3/2 Strong sustainability, stewardship, and the precautionary principle  
   Reading: Goodstein, ch. 7

W 3/4 Environmental issues in developing countries  
   Reading: Goodstein, ch. 21

F 3/6 Trade and the environment (Final paper due)  
   Reading: Goodstein, ch. 22

M 3/9 Summary/review

F 3/13 Final examination  
   8:00 a.m., location to be announced
GUIDELINES FOR FINAL PAPERS

Paper Topics

Your final paper should **summarize** and **critically assess** a journal article that is relevant to this course. You could choose to focus on an article that examines some aspect or application of natural resource economics from a disciplinary perspective. Or you could choose an article that analyzes a natural resource or environmental issue from an interdisciplinary perspective that involves some economics. Either way, you should carefully think through the following questions regarding the article you select:

- What research question(s) does the article address?
- What methods or approach do the authors use to answer this question?
- What findings or conclusions does the article present?

In researching and writing your paper, you’ll want to read and cite additional sources that address the topical issue, techniques, and/or theories considered in the article you are reviewing. **A total of ten sources is a good goal** to shoot for with an emphasis on **published books and journal articles**. If you were reviewing Bandara and Tisdell’s article on the benefits of elephant conservation (see the reading for 1/28), for example, you’d want to do research on both the contingent valuation method and the challenges presented by human-wildlife interactions. This would put you in a position to critically discuss the paper’s strengths and weaknesses.

Sources

If you’re interested in finding a journal article on a particular topic, try doing a subject or title word search using the **Web of Science**. This is a powerful tool that provides abstracts and online access to articles along with citations to related works. **Search360** is a related search engine that is worth checking out.

Alternatively, you could browse for articles in journals such as **Ecological Economics**, **Energy Economics**, **Environmental and Resource Economics**, the **Journal of Environmental Economics and Management**, or **Land Economics**. Interdisciplinary journals include (for example) **Energy Policy**, **Conservation Biology**, and **Climatic Change**. The specific source doesn’t matter as long as the article in question is both interesting to you and relevant to the course. Most journals at Dartmouth can be accessed from the **eResources** page on the library web site.

Style

1. Papers should be **6-8 pages** in length with **one-inch margins, double spacing**, and **12-point fonts**.

2. **Include page numbers** throughout your document.

3. Please pay attention to the following **guidelines for references and citations**:
   - When citing an article, book, or other work, give the author’s name and the year of publication in the body of your paper.
   - At the end of your paper, provide a bibliography that lists the author, date, and title of each cited work. For journal articles, give the volume and page numbers of each cited paper. For books, give the city and publisher.
   - **If in doubt, follow the reference style used in the Goodstein text.**