Economics 6535
Natural Resources and Environment
Spring 1997

Instructor: Prof. Anna Alberini
Economics Bldg., Rm. 115
(phone) 492-6653

Lectures: Mon and Wed 2:30 – 3:45

Office Hours: Wed 9:00 – 11:00 and 1:00 – 2:00

Study Material: Lecture notes and handouts. I also recommend the following books:
Portney, Paul (ed.), Public Policies for Environmental Protection

Purpose of the course: (1) To provide an overview of traditional and current issues in natural resource and environmental economics and policy; (2) to illustrate the methods devised by economists to tackle certain problems (for instance, how to estimate the demand for environmental quality in the absence of a market from which to obtain data on quantity demanded at each price level) along with the advantages and limitations of these methods; (3) to review papers that apply these methods, discuss these methods or look at interesting economic and policy-relevant issues. The course will have a very practical and policy-oriented flavor.

Course Requirements: One midterm exam (25% of the final grade) covering topics 1 through 3, an original paper or project (50% of the final grade) related to the topics covered in the course, and one in-class presentation of an article among those listed below (25% of the final grade). Students are encouraged to develop a project that "doubles" as their master's degree thesis work. Joint work with other students is permitted and encouraged, especially if the project is a complex one.
Course Prerequisites: High-level math is necessary for topics 1, 2, and 6, but I plan to explain the necessary techniques in class. Most of the papers covered in the course (topics 1, 5, 6, 7, and 8) are based on more or less sophisticated statistical and econometric analysis. I plan to explain the statistical and econometric analysis in a simple and intuitive way; students needing special help in these areas are encouraged to let me know as soon as possible, so that the pace of the course and the level of the exposition can be adjusted accordingly.

Suggested Topics:

1. Non-renewable resources: The optimal extraction rule in a competitive market and the Hotelling rule (Pyndick paper);
   Adding new discoveries (Toman and Walls chapter);
   How to empirical test the Hotelling rule (Berck chapter);
   An empirical test of the Hotelling principle (Miller and Upton paper);
   Combining econometrics and simulation techniques in an empirical model of extraction and new discoveries (Walls, Land Economics paper).

2. Renewable resources: Institutional framework (Bowes and Krutilla);
   Timber
   The Faustmann rotation problem for one rotation, multiple rotations, multiple rotations and multiple uses; harvesting to maximize sustainable yield (Bowes and Krutilla);
   Replacing multiple use with ecosystem protection goals (Sedjo);
   Deforestation Issues (Deacon)
   Fisheries
   A Bioeconomic model of fisheries (Conrad);
   Open-access and extinction issues (Berck).

3. The National Park System Overview and key issues;
   Using the Travel Cost Method to estimate the demand for amenities and national park visits (Freeman).

4. The Economics of Solid Waste and Recycling RCRA and some figures about solid waste generation (McKlein);
   An overview of economic incentives and policies targeted at reducing solid waste generation and encouraging recycling (Palmer and Walls);
   Hazardous Waste (RCRA, Section C: Portney)
5. The Economics of Hazardous Waste: Superfund

An overview of the Superfund statutes (Portney);
Some figures about Superfund site cleanup: the importance of transaction costs (RFF Superfund database);
Do cost considerations drive EPA in its Superfund cleanup decisions? (Cropper et al.)
Using the method of contingent valuation to assess the damage to natural resources (Freeman);
Hedonic methods (Freeman; Kiel).

6. An Important Problem Agricultural and Environmental Economics: Pesticides

A model of Pesticide Use in Agriculture (Zilberman);
An overview of pesticide regulation (FIFRA and TSCA);
Explicit and hidden goals in EPA's decisions about pesticides: (Cropper et al.).

7. Air Quality

The textbook treatment of pollution: taxes, pollution permits and emissions trading (Tietenberg);
Current air quality statutes (1990 Clean Air Act);
Stationary source policies and emissions trading (Tietenberg, Burtraw);
Mobile sources: the cost-effectiveness of I&M, remote sensing and accelerated vehicle retirement (Harrington and McConnell; Alberini, Harrington and McConnell).

8. Water Quality

An overview of the Clean Water Act (NRDC);
Cost-benefits considerations in operating wastewater treatment plants (McConnell-Schwartz).

9. The Value of Biodiversity

Lectures are based on the following materials (not required):

Exhaustible resources:


**Renewable Resources: Forestry Issues**


**Natural Resources: Fisheries**


**Solid and Hazardous Waste:**


**Pesticides**


**Air Quality**


**Water Quality**


**The Value of Biodiversity**


