ECON 4535: NATURAL RESOURCES ECONOMICS
EDWARD MOREY
FALL 1994

COURSE DESCRIPTION

Natural Resources Economics (4535) considers the efficient and equitable use of society's scarce natural resources. Natural resources include minerals, trees, fish, water, environmental systems, wildlife, parks, wilderness areas, etc. Natural resource use will be considered from three perspectives: the market allocation of natural resources, efficient and equitable allocations, and government attempts to achieve a more efficient and equitable allocation. Natural Resource Economics is a course in applied welfare economics. Welfare economics is concerned with the "welfare" of society and how economics can be used to improve society's welfare. The course will study in detail when the market is, and is not, capable of efficiently allocating natural resources. The course is designed for Econ majors who have had intermediate micro theory, calculus and math econ. My hope is that you will finish the course with a sound understanding of the economic theories of natural resource use and how these theories explain, in part, what does, and should, happen in the "real world".

DETAILS

There will be N short exams during the term; at least one for each section of the course. Review questions will be handed out for each section. Knowledge of these review questions will be very helpful when taking the exams. I strongly encourage you to write out answers to the review questions and discuss them with your classmates. You will want to form study groups. Each exam will take approximately 1/2 hour and likely consist of either one essay question or a few short-answer questions.

There will be a term paper (5-10 pages) which will be 25% of your grade. Choose some natural resource problem or environmental problem and evaluate it in economic terms. For example, choose a particular environmental market failure, explain why the market failed, and suggest policies for improving the situation. The intent of the paper is to get you to apply the economic theory that you have learned to a "real world" natural resource problem that you find interesting. I am particularly fond of paper on local issues.


I have a file of newspaper and magazine articles on topics that might make good topics for a paper. Please feel free to stop by and look through the file.

- Discuss your topic with me before you write the paper.
- The paper is due on December 3rd but try to get it in earlier if you can.

There will be a comprehensive final.
Your best (N-1) short-exam grades will constitute 40% of your course grade, and the final 35% of your course grade unless you do better on the final than on the short exams, in which case, the short exams will constitute 30% and your final 45% of your course grade.

I grade on the following scale
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\begin{align*}
\geq 90\% &= A \\
\geq 80\% &= B \\
\geq 70\% &= C \\
\geq 60\% &= D \\
\leq 59\% &= F
\end{align*}
\]

I grade on the basis on standards rather than on the basis of a curve. Everyone can get an A.

My office hours will be on Tuesdays from 9:15 - 10:45, Wednesday from 8:45 - 10:15, and by appointment. Please feel free to call 492-6898 to make an appointment. If I am not there leave a message and I will get back to you as soon as I can. Indicate when is a good time to call. Note that it might take a day or so for me to get back to you.

PREREQUISITES

Intermediated Micro Theory (C.U. Econ. 3070) and Introduction to Mathematical Economics (C.U. Econ. 4808), or my permission. Note that calculus is a prerequisite for Math Econ and I will use some calculus in the course. I will assume knowledge of the materials covered in all the prerequisite courses. These are important prerequisites.

READINGS

Over the years I have brought together a number of journal articles, magazine articles and newspaper articles. These articles are the required reading for the course. Some of these articles are quite old, others very recent. They vary in length from a few newspaper columns to twenty-page journal articles. Some of these articles will be discussed in class. I will often draw review questions from these articles. You are responsible for the material in all of the articles for each section of the outline that is covered in class, even though not all of the readings will be explicitly discussed in class.

Many of these articles were suggested by students. I encourage your comments and feedback on these readings. Bring me articles you feel would be good class readings, and tell me which of the current readings have the greatest value and which have the least value.

I will be the librarian for the readings. I will bring to class multiple copies of the articles for each section of the course. You will be able to sign them out until the next class. If you check them out to make copies, I encourage you to form group efforts. I ask you to help me with this process. With your help, this system will work well.

Note that much of the material I will present in class does not appear in any of the readings.
CLASS FORMAT

View the readings and my lectures as complements rather than substitutes. A lot of the basic material that you will be responsible for will be presented in lecture and is material that is not explicitly in the readings, so class attendance is imperative. Class time will be devoted lectures, problem solving, and discussions. It is important that you do the appropriate readings before each lecture. Some class time will be devoted to working on the review questions. Prepare for these review sessions by answering the questions to the best of your ability. I will ask a lot of questions and will often give extra credit for correct answers. Expect to be called on.

NATURAL RESOURCE ECONOMICS: OUTLINE AND READINGS

I do not anticipate covering the complete outline. Which sections we cover will depend on class interests and in how much depth we consider topics. The readings we don't get to might be a good source for paper material.

I. An Introduction to NR Economics

A. Defining natural resources and NR economics

B. To what extent does NR scarcity limit long run growth; i.e., Is Doomsday around the corner?
   Gano, "World Resources Running Out: Prof says religion of growth will doom us," in the Colorado Daily, Sept. 21, 1987

C. What is conservation?

D. The history of the conservation movement.

E. Non-Market Valuation: CVM and Travel-Cost
   "Polls May Help Government to Decide the Worth of Nature," NYT September 7, 93
   "Pollsters Enlist Psychologists in Quest for Unbiased Results," NYT September 7, 93

F. Macro models that include natural resources.
"Now, Grogl! Throw!... Throoooooow!...
Throw throw throw throw throw throw!..."

"Fish or cut bait? Fish or cut bait? Fish or cut bait?"

How fishermen blow their own minds
A. Commercial fishing and the CP problem
Scallop article in the CSM.
Oyster article in the WSJ.
Lobster article in the WSJ, Feb 2, 1988.
Catfish ad.
"How to Fish," The Economist, December 10, 1988

B. Static Common Property problems: roads and parks

Article on Deforestation in the CD.


Edney, J. "Free Riders En Route to Disaster," Psychology Today, August 1979, 80-87 102.

"Invaders on the Black River," Time Magazine, June 13, 1988

C. Recreational fishing and the CP problem

III. Discounting and Present Value

Chiang, Fundamental Methods of Mathematical Economics, 3rd edition, Ch. 10 (pp. 280-294 and 313-316 only) and Ch. 13 (pp. 452-459 only).

IV. Trees and Nonrenewable Resources

A. Trees and Portfolio Theory: optimal rotation, market failure?, and possible corrections

Lecture notes on trees

B. Trees: Other Issues
"You know what I'm sayin'? Me, for example. I couldn't work in some stuffy little office.... The outdoors just calls to me."


"Senate Passes Measure to Protect Alaskan Forest," *NY Times*, June 14, 1990.

"Loss of Tropical Forests is Found Much Worse Than Was Thought," *NY Times*, June 8, 1990.

"In Spring, Nature's Cycle Brings a Dead Tree to Life," *NY Times*, March 24, 1992.


(See also the articles relating to Trees in Section V.B. - the "owl" articles, and the articles in Section V.C. on "Our National Parks" and "Yellowstone Fires".)

C. Nonrenewable resources and portfolio theory: optimal extraction rates, market failure?, and possible corrections

1. An efficient allocation
   


   Lecture notes on nonrenewable resources

2. Market and nonmarket failure
   


V. Extinction and Preservation

A. Extinction: Economic causes
Review the readings from Section II.

Article on Swans in the *WSJ*.
"It's this new boyfriend, dear... I'm just afraid one day your father's going to up and blow him away."

Tragedy struck when Conroy, his mind preoccupied with work, stepped into the elevator—directly between a female grizzly and her cub.

B. Is it ever optimal to drive a species to extinction?
   "What Kind of Stewards of the Planet are We?," NY Times, June 5, 1990.

C. Preserving natural environments

Wildlife preserves
"For Farmers, Wetlands Mean a Legal Quagmire," *NY Times*, April 24, 1990.