Natural Resource Economics

Economics 122 / Env. Studies 179

Robert Deacon   Fall   2011

TAs & off. hrs: Chris Goodwin, North Hall 2053, goodwin@econ.ucsb.edu
                          Office hours: M 11:30am-1:30pm in SSMS 1303 (computer lab) starting Oct. 3

                          Rebecca Toseland, North Hall 3053, toseland@econ.ucsb.edu
                          Office hours: W 4:00-6:00 Phelps 1529 (computer lab)

Sections   M   3:00-3:50   Goodwin   SH 1430
                          M   4:00-4:50   Toseland   SH 1430
                          M   5:00-5:50   Toseland   SH 1430
                          M   5:00-5:50   Goodwin   PHELP3523

Lectures: T R 12:30- 1:45 LSB 1001

My office hrs.:   Tues. 3:00-5:00; 3040 North Hall, deacon@econ.ucsb.edu.

Exams: Midterm: Tues., Nov. 1 (35%)
                          Final: Mon. Dec. 5, 1:00-3:00 (50%); Review during 12:00-1:00.
                          (Homework problems count for the remaining 15%)

Course Description:

We will examine markets for natural resources, including minerals, fossil fuels, forest resources, and fisheries. We will also examine economic issues related to biodiversity and deforestation. Natural resource abundance is determined by physical processes and a general understanding of these processes is necessary for correct economic analysis. For this reason the study materials present biological models for fisheries and forests and incorporate geological concepts in examining minerals. Ownership rights to natural resources often are not clearly defined. In these cases the interests of some potential resource users will not be reflected in market outcomes and the scramble to acquire these un-owned assets may be wasteful. Finally, the use of natural resources is ultimately linked to the release of waste products into the environment, so there are considerations of environmental degradation. These themes appear at various points in the course.

Pre-requisites:

Intermediate microeconomics (Econ. 10A or Econ. 104A) is required. Two sets of concepts are used repeatedly: welfare economics (concepts of Pareto efficiency, externalities and property rights) and intertemporal choice (interest rates, investment decisions and present value). These concepts will be presented briefly in class and in Section II of the readings, but the time spent will be minimal. Students who have not taken the second quarter of intermediate microeconomics are encouraged to review sections of intermediate microeconomics texts that cover this material.

Readings and Other Study Materials:

Readings for this course are available online, with links provided on GauchoSpace. It is important to read the material for a given section of the course prior to lecture. I have prepared .pdf files with the slides I use in lecture, with lilnks on GauchoSpace. Some of these give mathematical formulas, derivations and models to be used in the course. I suggest that you review the appropriate slides before lecture and print them and bring them to class to assist in taking notes. The slides are integral to the course and cover some topics not treated in the readings. Much of this material will be included on exams.

Exams, Homework Problems and Grading

Exams. Exam dates and weights used in grading are listed above. Both exams will consist of objective questions and problems (e.g., T/F, multiple choice, solve a problem and fill in the blank, etc.). Samples for questions on the readings will be provided early in the quarter. For more analytical questions, your homework problems are good examples. No make-up exams will be given. Students who miss the midterm for a valid reason (illness, family emergency, etc.) may substitute a term paper in its place. If you will miss the midterm and write a paper instead you must inform me *before the scheduled examination time*, or else provide a doctor's note indicating that you were unable to attend. Please see me for term paper guidelines if you choose this option. The final exam will primarily cover material presented after the midterm (about three-fourths of the exam questions), but some questions (about one-fourth) will cover material from before the midterm. Please note: topics in non-renewable resources will not be covered on the midterm even though some pre-midterm lectures will be on those topics.

Numerical grades assigned to your exams and homework problems correspond to the following letter grades.

	Points	
Letter Grade	20	100
A, A-	18-20	87-100
B+, B, B-	15-17	73-86
C+, C, C-	12-14	58-72
D+, D, D-	9-11	43-57
F	<9	0-43

Homework problems. Homework problems are available Gauchospace and will be completed and graded online. Our TA, Chris Goodwin, will provide guidance on completing these. Homework problems are mandatory and performance on them constitutes 15% of the course grade. They will also give you practice answering the types of questions you will find on exams. If homework problems are submitted late (after 5:00 pm on the due date), 5 points (out of 20) will be deducted for each day late including weekend days. We will drop your lowest homework grade when computing your course grade.

TOPIC OUTLINE, READINGS AND SLIDES

I. Basic Facts and Concepts (IntrodSlides)

Balsdon, E., and R. Deacon, "Economics of Exhaustible Resources," *International Encyclopedia of the Social and Behavioral Sciences*, Orley Ashenfelter (editor for economics,) Elsevier Sciences Ltd., 2002.

A.V. Kneese, *et al.*, "Economics of the Environment: A Materials Balance Approach", in Enthoven and Freeman, *Pollution, Resources, and the Environment*, Norton, 1973.

II. Welfare Economics, Benefit Cost Analysis and Intertemporal Choice (ReviewSlides)

T. Tietenberg, *Environmental and Natural Resource Economics*, 7th Ed.
Chapters 2 and 4. (Tietenberg Chaps 2 & 4)   Note: For further depth, review relevant sections of your intermediate microeconomics text, e.g., H. Varian, *Intermediate Microeconomics.*

III. Forest Resources (ForestSlides)

R.T. Deacon, "The Simple Analytics of Forest Economics", in R.T. Deacon and M.B. Johnson, eds., *Forestlands, Public and Private*, Ballinger, 1986.

A. Berry, "Two Forests Under the Big Sky," PERC Policy Series: PS-45, 2009.

P. E. Kauppi, et al "Returning forests analyzed with the forest identity" *Proceedings of the National Academy of Sciences*, Nov. 14, 2006. 17574-17579.

MIDTERM EXAM (November 1; does not cover non-renewables)

IV. Non-renewable Resources (NRRSlides)

J.W. Griffin and H.B. Steele, *Energy Economics and Policy*, Chapter 3. "Criteria for Efficient Dynamic Resource Allocation."

Severen Borenstein, 2005. "ANWR Oil and the Price of Gasoline," *Energy Notes*, Vol. 3, Issue 2, June 2005, University of California Energy Institute.

V. Fisheries (FishSlides)

Tietenberg andf Lewis, *Environmental and Natural Resource Economics*, 8th Edition, Chapter 14, "Common-Pool Resources: Fisheries …".

Robert T. Deacon. "Creating Marine Assets: Property Rights in Ocean Fisheries," PERC Policy Series No. 43, Property and Environment Research Center, Bozeman, MT.

VI. Biodiversity and Species Extinction (BiodiversitySlides, Noah's Ark spreadsheet)

Barry Field, 2005. "The Economics of Biodiversity Preservation." Chapter 19 in Barry Field, *Natural Resource Economics*, Waveland Press.

VII. Concluding comments (FinaleSlides)