Economics 435
Natural Resource Economics
Autumn 2020
Professor Robert Halvorsen

ECON 435 is a survey of the economics of natural resources. Topics include renewable resources, such as fish and trees; nonrenewable resources, such as oil and copper; environmental resources, such as clean air and water; and ecological resources, such as biodiversity and endangered species. A principal theme in analyzing these topics is the determination of the optimal trade-offs between the benefits and costs of resource use, with special emphasis on trade-offs between current and future resource use and the implications for sustainability.

The prerequisite for this course is ECON 300 and the class discussions will assume that students have a solid understanding of intermediate level microeconomics. Two, non-cumulative, exams will count for 70% of the course grade, with the (curved) grade for the exam on which you do better receiving a weight of 0.6 in calculating the overall exam grade and the exam on which you do less well receiving a weight of 0.4. The exams will be open-notes. Last Quarter's exams are posted on Canvas as a preview of the types of questions that will be asked as well as sources of practice questions in studying for this Quarter's exams.

Four quizzes will count for 20% of the course grade. The quiz on which you do least well will not be included in calculating the overall quiz grade.

Four problem sets will count for 10% of the course grade and will be graded credit/no credit. Detailed answer sheets will be posted for the problem sets and quizzes. Reviewing the answers and comparing them to your own are excellent ways to learn the course material.

Exams, quizzes, and problem sets do not need to be typed but do need to be easy to read. Exams and quizzes **must** be submitted as PDFs. If you do not have access to a scanner, you can use a cell phone scanning app (e.g., Adobe Scan).

There is no textbook or course pack. Lectures will be recorded and posted on Zoom and lecture notes will be posted on Canvas.

My office hours are 10:00 – 11:00 A.M. Seattle time on Monday and Wednesday. An appointment to meet at another mutually agreeable time can be made by email at halvor@uw.edu. You may also use email to ask any short-answer questions that may arise as you review your notes or work on the problem sets.

Course Schedule

All dates except for the final exam are subject to revision.

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/)..

October 1st

Microeconomic theory of policy evaluation
Economic efficiency and equity
Private markets and efficiency

October 6th

Dynamic efficiency
Present value analysis

October 8th

Forestry Economics
Optimal harvesting age
Standing value
Multiple-use forests

October 13th

Harvesting with replanting
Faustmann rule
Recycling and the stock of trees
Deforestation

October 15th **Problem Set 1 Due**

Fisheries Economics
Property rights
Sustainable yield as a function of stock
Dynamic analysis of optimal stock and harvest

October 20th **Quiz 1**

Sustainable yield as a function of effort
Perverse open-access results

October 22nd

Goals of public policy
Command and control instruments
Economic incentive instruments

October 27th Problem Set 2 Due

Nonrenewable resources
Condition for optimal extraction

October 29th Quiz 2

Effect of constant extraction cost
Comparative dynamics
Monopolistic extraction

November 3rd REVIEW FOR MIDTERM EXAM

November 5th MIDTERM EXAM

November 10th

Effects of taxes and subsidies

November 12th

Effects of externalities
Threat of expropriation
Green Paradox

November 17th Problem Set 3 Due

Sustainability
Desirability
Feasibility
Prospects

November 19th Quiz 3

Environmental economics
Pollution diagram
Coase theorem
Policy instruments: MB and MD curves known

November 24th

Policy instruments: MB and MD curves not known
Policy instruments: MB and MD curves uncertain
Climate change

November 26th THANKSGIVING

December 1rd Problem Set 4 Due

Ecological Resources
Economics and Ecology
Biodiversity
Preservation of species

December 3rd **Quiz 4**

Weitzman's cost effectiveness analysis
US Endangered Species Act
CITES

December 8th **REVIEW FOR FINAL EXAM**

December 10th **FINAL EXAM COVERS MATERIAL SINCE MIDTERM EXAM**