

Economics 435
Natural Resource Economics
Autumn 2019
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 0.7 in calculating the overall exam grade and the exam on which you do less well receiving a weight of 0.3. 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.

Six quizzes will account for 20% of the course grade. The quiz on which you do least well will not be included in calculating the overall quiz grade. **Please refer to the next page for very important information on the rules for taking exams and quizzes. Note especially the information concerning cell phones.**

Eight problem sets will account for 10% of the course grade. Your answers will be collected in class. They do not need to be typed but do need to be legible. 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.

There is no textbook or course pack for this course. Lecture notes on the topics expected to be covered in class are posted on Canvas. The actual lectures given in class will not necessarily be identical to the posted notes. Problem sets and answers to problem sets and quizzes will also be posted.

My office hours during the Autumn Quarter are 10:00-11:00 on Monday, Tuesday, and Friday in Savery 351. An appointment to meet at another mutually convenient time can be made in person after class or by email at halvor@uw.edu. You can also use email to ask any short-answer questions that may arise as you review your notes or work on the problem sets.

Exam Rules

I Exam Absence Policy

1. If you are unable to make it to an exam period due to illness or another unexpected happening, do the following:

- i. Notify me no later than the time of the exam that you are not able to take the exam and why.
- ii. If you missed the exam for health reasons, you need to show me a note issued by a medical professional documenting the reason you missed the exam.
- iii. If there was some other reason for missing the exam, come and see me to explain the reason. You will need to show appropriate documentation. Not waking up or missing your bus/plane is not an acceptable excuse.

2. If you know that you are going to be away due to a University-related activity, such as participation in an away sport or debate, let me know well in advance so that arrangements can be made.

II Exam Taking Rules

1. Material allowed during an exam.

- i. You must use a large bluebook for your answers.
- ii. All books, papers, notebooks, etc., must be placed inside your backpack or other type of bag, which must be securely and fully closed. If you do not have a bag, you must place all your material out of your reach.
- iii. No electronic devices, including calculators, can be accessible during the exam. Cell phones must be turned off and placed in your closed bag (not in your pocket). **If your cell phone is observed at any point during the exam, your exam will be taken away and assigned a grade of zero.**
- iv. Baseball caps and any other kinds of headgear that conceal your eyes are not permitted.

2. Attendance and special accommodation

- i. You are not allowed to leave the room during the exam. This includes restroom use; be sure to use the restroom before the beginning of the exam.
- ii. If you arrive late to an exam, you cannot expect to get extra time after the official end of the exam to make up for the missing time at the beginning.
- iii. If you have a documented disability, please show me documentation from the Office of Disability Resources for Students on the first day of class, so that I can make any arrangements required for accommodations.

III Academic Integrity

1. Exams are individual work and cheating will not be tolerated. Looking at notes or your neighbors' answers will result in the immediate termination of your exam time and a grade of zero for the exam.

2. Altering an exam before submitting it for a review of the grading, obtaining an advance copy of an examination, or arranging for a surrogate test-taker are all flagrant violations of University policy.

3. Cheating of any kind may result in expulsion from the University. The Department will follow University policy in case of academic misconduct. I strongly recommend that you review University policy at <http://www.washington.edu/uaa/advising/help/academicintegrity.php>. Students found to have engaged in academic dishonesty will be subject to sanctions, which range from a disciplinary warning to permanent expulsion from the University, depending on the seriousness of the misconduct.

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/)

(<https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/>). Accommodations must be requested within the first two weeks of this course using the [Religious Accommodations Request form](https://registrar.washington.edu/students/religious-accommodations-request/) (<https://registrar.washington.edu/students/religious-accommodations-request/>).

September 26th

Microeconomic theory of policy evaluation

Economic efficiency and equity
Private markets and efficiency

October 1st

Dynamic efficiency
Present value analysis

October 3rd **Problem Set 1 Due**

Nonrenewable resources

Condition for optimal extraction

October 8th **Quiz 1**

Effect of constant extraction cost
Comparative dynamics
Monopolistic extraction

October 10th **Problem Set 2 Due**

Effects of taxes and subsidies

October 15th: **Quiz 2**

Effects of externalities
Threat of expropriation
Green Paradox

October 17th: **Problem Set 3 Due**

Forestry Economics

Optimal harvesting age
Standing value

October 22nd **Quiz 3**

Harvesting with replanting
Recycling and the stock of trees
Deforestation

October 24th Problem Set 4 Due

Economics of Fisheries

Property rights

Sustainable yield as a function of stock

Dynamic analysis of optimal stock and harvest

October 29th REVIEW FOR MIDTERM EXAM

October 31st MIDTERM EXAM

November 5th

Sustainable yield as a function of effort

Perverse open-access results

November 7th Problem Set 5 Due

Goals of public policy

Command and control instruments

Economic incentive instruments

November 12th Quiz 4

Sustainability

Definition

Desirability

November 14th Problem Set 6 Due

Feasibility

Prospects

Environmental economics

Pollution diagram

Policy instruments: MB and MD curves known

November 19th Quiz 5

Policy instruments: MB and MD curves not known

Climate change

November 21st Problem Set 7 Due

Ecological Resources

Economics and Ecology

Biodiversity

Preservation of species

November 26th Quiz 6

Weitzman's cost effectiveness analysis

US Endangered Species Act
CITES

November 28th THANKSGIVING

**December 3rd REVIEW FOR FINAL EXAM
Problem Set 8 due**

December 5th FINAL EXAM COVERS MATERIAL SINCE MIDTERM EXAM