Economics 436
Environmental Economics
Syllabus
Spring 2020
Prof. Robert Halvorsen

ECON 436 analyzes the relationship between economic activity and environmental quality. The major topics considered are the economic origins of environmental problems, the trade-offs involved in determining the goals of public policy toward the environment, the choice of policy instruments to attain those goals, and the role economic analysis has played in the formulation of actual environmental policy in the U.S. By the end of the course, students should understand how to apply economic analysis to determine the optimal level of environmental quality, the circumstances under which a free market system will and will not result in optimal outcomes, and the advantages and disadvantages of alternative policy instruments for improving on market outcomes.

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 count for 80% 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. The exams will be open-book. 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. Given the changed circumstances this Quarter, I anticipate that there will be more numerical questions than last Quarter.

Seven problem sets count for 20% of the course grade and will be graded credit/no credit. Detailed answer sheets will be posted for the problem sets. Previous students have reported that doing the problem sets and reviewing the answer sheets are very good ways to learn the course material.

Exams and problem sets do not need to be typed but do need to be legible.They should be scanned and posted to Canvas. If you do not have access to a scanner, please use a scanning app for your cell phone (e.g., Adobe Scan).

I will use Zoom for the lectures. The scheduled class times are Monday and Wednesday from 2:30-4:20 PM Seattle time. I have posted the full set of notes on Canvas. If you have any questons when reviewing the lectures or working on the problem sets, please email me at halvor@uw.edu.

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/). 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/).

March 30th Lecture 1

Technical alternatives for reducing pollution
Derivation of the standard pollution diagram

April 1st Lecture 2

Coase Theorem

April 6th Lecture 3
Problem Set 1 Due

Policy design when MB and MD curves are known
- Incentives for innovation
- Monopolistic polluter

April 8th Lecture 4

- Non-monotonic marginal damages
- Non-convex total net benefits

April 13th Lecture 5
Problem Set 2 Due

Instrument choice when MB and MD curves are not known
- Per unit tax vs. regulation
- Tradable pollution permits

April 15th Lecture 6

Instrument choice when MB and MD curves are uncertain
- Expected Pigouvian tax vs. tradable permits
- Hybrid instrument
- Nonlinear tax

April 20th Lecture 7
Problem Set 3 Due

Disaggregate pollution
Distributional effects of environmental policies
Political economy of instrument choice

April 22nd Lecture 8

Economic efficiency and social welfare
Criteria for policy analysis
Marginal willingness to pay vs. marginal utility

April 27th Review for midterm exam

April 29th Midterm Exam

May 4th Lecture 9
Problem Set 4 Due

Porter hypothesis
Types of policy analysis
Value of a statistical life (VSL)

May 6th Lecture 10

Estimation of VSL
Factors affecting VSL
Risk-risk analysis

May 11th Lecture 11
Problem Set 5 Due

Water pollution
Air pollution control
National Ambient Air Quality Standards
Regulatory policies

May 13th Lecture 12

Benefit-cost analysis
Global issues: 1973 perspective
Stratospheric ozone depletion

May 18th Lecture 13
Problem Set 6 Due

Global climate change

Causes and effects
Technical alternatives for responding to global climate change

May 20th Lecture 14

Obstacles to effective international agreements

May 25th Memorial day

May 27th **Lecture 15**
Problem Set 7 Due

Discounting and climate change
- Rate of time preference
- Opportunity cost rate
- Discounting formulas

June 1st **Review for final exam**

June 3rd **Final Exam Covers Material Since Midterm Exam.**