

**ECON 362
Environmental Economics
Section 1676-01
Spring 2023****INSTRUCTOR INFORMATION**

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TIME/PLACE

Term Dates: January 23, 2023 – May 15, 2023
Weekly Class Meeting: Mondays 3-5:50PM
Classroom: Bell Tower 1462
Office Hours: 2 to 3 P.M.—or by Appointment
Sage Hall # 2042. Ext. 8599

Course Description:

The objective of this course is to develop the techniques of economic reasoning and to apply them to environmental issues. In particular, the topics of pollution and natural resource management, measurement of cost and benefits of environmental protection, and market failures due to externalities will be addressed in this course.

Program Learning Goals: These are the skills we try to help you build in all MVS courses

1. Critical Thinking
2. Oral Communication
3. Written Communication
4. Collaboration
5. Conduct (Ethics)
6. Competency in Discipline

Course Learning Outcomes:

Students who successfully complete this course will be able to:

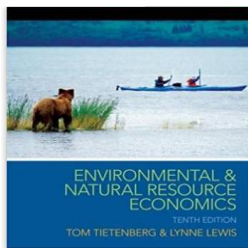
- Define the conditions for an economically efficient allocation of resources (1,3)
- Apply economic analysis and efficiency in natural resources and environmental problems (1,6)
- Explain those circumstances under which a market-based economy will allocate resources efficiently (2,3)
- Explain measurement of cost and benefits of environmental protection (2,3)
- Analyze applications of cost and benefit analysis in policy making (2,3)
- Explain cost-effectiveness and impact Analysis (1,2,3)
- Explain those circumstances under which a market-based economy will fail to allocate resources efficiently. In particular, students will be able to demonstrate market failures due to externalities (2,3,4)
- Analyze government regulatory attempts to correct market failures in terms of their economic efficiency (1,2,3,6)
- Describe incentive-based approaches to correct market failures (2,3)
- Identify examples of common property resources (2,3)
- Apply the Coase theorem to environmental issues and use the Coase theorem to develop policies to improve environmental quality. (1,2,3)
- Analyze government policy toward common property resources (1,2,3)
- Make an effective oral presentation (using PowerPoint) (2)

Prerequisites:

Principles of Microeconomics (Econ 110 and Econ 111 or Econ 300)

Required Text:

Environmental & Natural Resources Economics by Tom Tietenberg and Lynne Lewis, 2015 (10th Edition), Published by Addison-Wesley. Additional readings will be assigned as well. See the Chapter Assignments Section.



Evaluation Procedures and Grading

Student performance will be evaluated on the basis of two one-hour exams, the final exam, one report and presentation, and homework and class assignments. The grades will be based on 20 percent for each of the two midterms, 20 percent for the final exam, and 30 percent for one term-paper and presentation, and the remaining 10% is for the class assignments and participations.

Each student is expected to write one report (2500 words, about 8-10 pages doubled spaced) on a topic discussed in the class or from the list of topics given in the syllabus. The report will be summarized and presented by the student during the class period. Students can submit their reports up to one week before the Final Exam. Choose an environmental problem and evaluate it in economic terms. I have listed some candidate topics for your reports. Once you have settled on a topic, do a rough outline and come see me.

Grading

40%
20%
30%
10%

Semester's Grade Determination

Two mid-term exams
Final Exam
Term-Paper and Presentation
Homework

The following scale will be used to determine the letter grade:

<u>Percentage</u>	<u>Letter grade</u>
95 – 100%	A
90 – 94.9	A-
87 – 89.9	B+
83 – 86.9	B
80 – 82.9	B-
77 – 79.9	C+
73 – 76.9	C
70 – 72.9	C-
67 – 69.9	D+
63 – 66.9	D
60 – 62.9	D-

Incompletes and Late Withdrawal

Incomplete grades will only be awarded under extraordinary circumstances. Not doing well in the course does not constitute an extraordinary circumstance. To avoid being assigned failing grades, students who decide not to complete the class must withdraw themselves from the class in accordance with the procedures described in the University catalog.

Drop Policy

According to University policy, non-attendance does not constitute withdrawal; to withdraw from this class you must file a drop form with the University. If you fail to attend this class, and you do not formally drop the class, a "WU" (unauthorized withdrawal), the equivalent of a failing grade, will be recorded.

Academic Dishonesty

University rules prohibit cheating, fabrication, facilitating the academic dishonesty of another

student, and plagiarism. In accordance with the CSU Channel Islands policy on academic dishonesty, students in this course who submit the work of others as their own (plagiarize), cheat on tests and examinations, help other students cheat or plagiarize, or commit other acts of academic dishonesty will receive appropriate academic penalties, up to and including failing the course.

Disability Accommodation Services

Students with disabilities needing accommodation, make requests to, Disability Accommodation Services, East Bell Tower, 1796. Please discuss approved accommodations with me.

Class Disruption Plan

A disruption means you, me, or all of us cannot participate in 'class as usual' for a reason we could not predict at the beginning of the semester. After COVID-19, we are well aware that disruption can happen fast. While we hope to avoid any closures due to COVID related reasons, let's face it, disruption happens every semester. You may get sick, I may get sick, or campus may close due to a wildfire. Our goal as a learning community is to do our best to keep teaching and learning with as little interruption as possible. The following sections explain what you can expect from me and what I expect from you when facing disruption - small or big!

If I am 'out'

If I get ill, or need to care for a loved one, or some other unexpected interruption, I may not be able to be present or interactive in the course. If that were to happen (and let's hope it doesn't), you need to follow the Canvas instruction where I will place lectures, and PowerPoint slides, assignments, and exams.

If you are 'out'

If you are out for the same above reasons, you need to let me know and we can communicate via email. You will need to follow the Canvas instructions and modules for your assignments. take a few hours or days.

If Campus Closes

If all of campus closes, which has happened at least once over the last three or more academic years, the class will be conducted on-line via zoom through Canvas with associated instructions. In that case, you would need reliable wifi and/or a computer with a webcam and microphone.

Course Outline

Review of Economic Concepts How Much Pollution is too much?

- Optimal allocation of Resources
- Market system, supply and demand
- Public versus Private goods and the free rider problem
- Externalities, and market failure
- Consumer surplus, marginal cost, marginal returns, opportunity costs, and other cost concepts
- Cost and Benefit analysis and discounting concept (Optimal Level of Pollution)
- How Much Pollution is too Much?

Economics of Environmental Regulations Is Government Up to the Job?

Analyze government regulatory attempts to correct market failures in terms of their economic efficiency.

- How can government make cost-effective regulations?
- Command-and-Control Strategies: The Case of Standards
- Incentive-Based Strategies: Emission Charges and Subsidies
- Incentive-Based Strategies: Transferable Discharge Permits, Cap and Trade Program.

Chapter Assignments

- I. Introduction and Conceptual Framework for Analysis of Natural Resource and Environmental Problems.
 - A. Review of economic concepts; market system, supply, demand, market failure, consumer surplus, externalities, marginal cost, marginal returns, opportunity costs and other cost concepts, discounting, public (collective) goods, common property resources (open access resources) and materials balance model.
 - B. Readings:
 1. Tom Tietenberg. Environmental Economics and Policy, 10th ed., 2015. Chapters 1, 2, 3 and 4.
- II. Decision Making and Analysis for Natural Resource Use and Environmental Protection.
 - A. Planning approaches and analytical techniques for project feasibility, cost effective and benefit/cost analysis including the use of productivity measures, travel cost procedures, contingent valuation, and market data to estimate benefits and costs.

B. Readings:

1. Tom Tietenberg. Environmental Economics and Policy, 10th ed., 2015. Chapter 3.
2. Elaine Shen, Shah Dabirian, Socioeconomic Report of the 2022 Air Quality Management Plan (Chapter 3 Benefit and Cost).
https://www.aqmd.gov/docs/default-source/clean-air-plans/socioeconomic-analysis/2022-aqmp-socioeconomic-report/draft-final-socioeconomic-report_11-23-22.pdf?sfvrsn=6

Cost and Benefit Analysis of the EPA Clean Air Act Regulation
[Benefits and Costs of the Clean Air Act | US EPA](#)
3. Costs-Benefit Analysis of Advanced Clean Fleets
<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2022/acf22/isor2.pdf>
<http://www.nrel.gov/vehiclesandfuels/vsa/pdfs/40485.pdf>
4. Sizing the Clean Economy
http://www.brookings.edu/reports/2011/0713_clean_economy.aspx
Matthew A. Cole, and Rob J. Elliott “Do Environmental Regulations Cost Jobs?” An Industry-Level Analysis of the U.K. The B.E. Journal
5. CalEnviro Screen 2022.
<https://oehha.ca.gov/calenviroscreen/report/calenviroscreen-40>

III. Natural Resource Use and Scarcity

- A. Natural resource stocks and rates of use; resource use and population growth rates; optimum use of natural resources over time; alternative approaches to managing natural resources and factors mitigating scarcity.

B. Readings:

1. Tom Tietenberg. Environmental Economics and Policy, 10th ed., 2015. Chapters 6-13.
2. Amory B. Lovins Reinventing Fire, Rocky Mountain Institute 2011.
3. Shah Dabirian. “Uncertain Environmental Risk and Optimal Rate of Oil Recovery.” Journal of Environmental Management. December 1995.

IV. Environmental Economics and Future Growth and Development and the Interaction of Natural Resource and Human Systems.

- A. Managing waste disposal systems, controlling pollution levels, optimal levels of pollution control, emission charges, standards and pollution permits.

B. Readings:

1. Tom Tietenberg. Environmental Economics and Policy, 10th ed., 2015. Chapters 14-22.
2. Sue Lieu, Scott Johnson, Shah Dabirian. “An Approach to Evaluating the

Economic Impact of Emission Trading.” Journal of Air and Waste Management, 1993.

You may access numerous related articles by using the EPA’s environmental economic sites, classified by topic, at <https://www.epa.gov/environmental-economics>.

Lecture Schedule

January 23 Introduction Visions of the Future (Text Ch. 1)

Economics Approach: Property Rights, Externalities, and Environmental Problems (Text Ch. 2).

January 30th Evaluating Trade-Offs: Benefit and Cost Analysis and Cost-effectiveness (Text Ch. 3).

Cost-effectiveness of Air Quality Regulations

Chapter 3, Benefit and Cost “Socioeconomic Report of the 2022 Air Quality Management Plan.” <http://airnet.aqmd.gov/>

February 6th Valuing the Environmental Methods (Text Chapter 4)

13 Dynamic Efficiency and Sustainable Development (Tentative) (Text Ch. 5).

February 20 First Exam

Depletable Resource Allocation: (Text Ch. 6)

27 Energy: Transitions from Depletable to Renewable Resources (Text Ch. 7)

March 6th Recyclable Resources: Minerals, Paper, Bottle, and E-waste (Text Ch. 8)

13 Water Resources (Text Ch. 9)

March 20th Spring Break

27 Land and Agriculture (Text Ch. 10)

April 3rd Storable, Renewable Resources, Biodiversity I: Forest (Text Ch. 11)

Common-Pool Resources: Commercial Fisheries
(Text Ch. 12)

April. 10th Second Exam

17 Economics of Pollution Control (Text Ch. 14)

24 Stationary-Source, Local Air Pollution (Text Ch. 15)

May 1 Climate Change and Environmental Justice (Text Ch.16)

8 Mobile Source and Transportation Air Pollution (Text Ch. 17)

Water Pollution Control (Text Ch. 18)

Toxic substance and Environmental Justice (Text Ch. 19)

May 15th Final Exam

Selected Topics for Paper and Presentation

1. What are the potential Nuclear Disasters in U.S.?
2. Assess National and Regional Green Jobs creations.
3. Would opening the Alaskan National Wildlife Refuge to oil drilling give the U.S. oil price stability? Hint: Consider OPEC's impact on oil prices and the quantity of oil available in Alaska relative to what the U.S. imports.
4. What are the arguments for and against compensating forest property owners overseas when environmental regulation limits their land use?
5. Do Environmental Regulations Cost Jobs?
6. Analyze and discuss the following statement: "As the U.S.'s cost of disposing of trash increases over time, recycling rates should automatically increase as well." What factors might prevent or encourage recycling to expand?
7. What are the impacts of conservation on global warming?
8. According to the South Coast Air Quality Management District, seventy percent of air pollution in the Los Angeles Air Basin is coming from mobile sources. What would be the solution?
9. In your hometown what system or method is used to price the city's water supply? What are the advantages and disadvantages of this pricing system? What system would you recommend?
10. Is the 200-mile limit a sufficient form of government intervention to ensure that the tragedy of the commons (open access) does not occur for ocean fisheries within the 200-mile limit? Why or why not?
11. What are the economic incentives (reasons) to limit family size? What are the economic reasons for the drop-in population growth rate?
12. What are the pros and cons of export of hazardous waste to developing countries? Under what conditions, if any, would it be an economically efficient solution?
13. Do the goals of environmental policy and our concern for the poor, inevitably conflict? Does the burden of attempts to improve the environment necessarily fall disproportionately on the poor?
14. When the undesirable side effects are considered, is economic growth counterproductive? Why or why not? Has the economic growth process outlived its usefulness?

15. Food self-sufficiency is a poor public policy for developing countries. Use economics to explain why.
16. Review and evaluate different policies for managing fish: taxes, regulation, quotas, permits, etc.
17. Will biotechnology in forestry lead to a surplus of wood in the future much as it has for agricultural products? Why or why not?
18. Give the pros and cons of not being able to consider costs when setting air pollution standards?
19. What are current views of reducing greenhouse gases and global warming?
20. Do we pay the full cost of driving cars in the U.S.? What costs are left out? Why?
212. How widespread is groundwater contamination by toxic chemicals in the U.S.? What can we do to reduce the contamination?
22. Evaluate the economic potential of biofuels, such as biodiesel, from a social economic perspective.
23. Evaluate the economic potential of wind or solar energy from a social-economic perspective.
24. What are the costs of mercury contamination in the U.S.? What are their major sources and means of control?
25. What are the potential adverse health effects of GMO's?
26. Current policies toward Environmental Justice.
27. Are Electric cars really greener?
28. How green are the electric vehicles?