

## ECON 533: Natural Resource Economics

Prerequisite: Intermediate Microeconomics, basic calculus

This class is about the application of economic theory on various natural resource issues such as population, food, energy, nonrenewable and renewable resources. We will learn useful theoretical tools to analyze different problems, the necessity of government intervention, its policy tools and their effects on our economy. This course will be math-intensive; we will be solving both static and dynamic optimization problems. If you have not taken a calculus class, or if you have not completed intermediate microeconomics using calculus, refrain from taking this course. Course activities is likely to involve programming exercise using STELLA, system analysis program

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### Textbook

Tietenberg, *Environmental and Natural Resource Economics*, 7th edition, Addison Wesley, ISBN 0-321-30504-3.

Hacker, *A Pocket Style Manual*, 3rd edition

Other supplementary materials for mathematical techniques

### Homework

Exercise problems will be as we finish topics. Problems will be posted through the Blackboard course website.

### Term Paper and Presentation (for EC533 only)

As a part of the coursework, students must write a term paper on the topic of their choice and present findings during the 10th week. The paper must include a literature review covering at least 6 articles (in addition to the article listed above) from refereed academic journals of economics.

Deadlines:

Friday, 7th week

Consultation meeting due (you must bring the list of articles)

Tuesday, 8th week

Topic approval deadline

**Friday, 10th week,  
10:00 a.m.**

**Paper due**

### Exam

There will be a math quiz (Tuesday, week 2), one midterm exams (Thursday, week 5)

and a final exam (as scheduled by the university).

### Grades

Math quiz	5 points
Homework	10 points
Active participation as audience for the presentation of the term projects in week 10	5 points
Midterm exam	40 points
<u>Final exam</u>	<u>40 points</u>
Basis for the course grade:	100 points for ECON 433 students

Plus

Presentation	15 points
<u>Term paper</u>	<u>25 points</u>
Basis for the course grade:	140 points for ECON 533 students

minus

Absence	5 point <u>per day</u> after three absences
Missing the presentation of your classmates' projects	5 points <u>per presentation</u>
Late submission	20% for the first hour, 40% for the second hour. Submission not accepted after 2 hours of delay.

### Rules for this course

**Rule #1. If you know that you cannot come to class to take the quiz and exams as scheduled, DO NOT TAKE THIS COURSE.**

A Make-up quiz, exam, or other arrangements will be granted only when students have legitimate reasons, *with proper documents*. Acceptable reasons are limited to:

1. Sudden death of a family member or a close relative.
2. Your university asks you to perform duties for the university (*e.g.*, athletic events).
3. Your government asks you to perform public service (*e.g.*, military service, jury duties).
4. Extreme medical conditions.

If you do not have legitimate reasons, please refrain from asking for special accommodations for you.

**Rule #2. If you cannot commit to attend classes regularly, DO NOT TAKE THIS COURSE.**

Exams will be based on the material covered in class and the exercise problems.

Skipping classes and reading the textbook will not be sufficient to prepare for them. As noted above, there also are penalties for missing classes.

**Rule #3. There will be NO “extra-point” assignments.** Please refrain from asking for one.

**Rule #4. Once a graded material is returned to you, any correction of the grades (grading errors, wrong score, etc.) must be done within a week.** This means that, at the end of the term, please refrain from asking for the re-evaluation of all the graded works for the entire term.

**Rule #5. If you miss a class, it is your responsibility to catch up with the material.** Make sure to obtain a copy of the lecture note from your classmates and review the material carefully.

**Rule #6. When you come see me to ask questions, review the definitions of key terms and concepts prior to the visit.** For example, if you want to ask why “when there exist negative externalities, the supply curve does not reflect the Marginal Social Cost (MSC) of resource use,” don’t come to my office without first reviewing what “negative externalities” are and what the “MSC” represents. Prepare for the visit by first familiarizing yourself with the relevant concepts, and then come see me.

## Sample Articles for the Term Paper

1. Darmstadter, J. "The economic and policy setting of renewable energy: where do things stand?" *Resources For the Future Discussion Paper*, 2003.
2. Gerlagh, Reyer and B.C.C. van der Zwaan. "Long-Term Substitutability between Environmental and Man-Made Goods." *Journal of Environmental Economics and Management*, vol. 44, no. 2, September 2002: 329-345.
3. Portney, P.R. "The Contingent Valuation Debate: Why Economists Should Care" *The Journal of Economic Perspectives*, vol. 8, No. 4. Autumn, 1994: 3-17
4. Giuseppe Di Vita. "Renewable Resource and Waste Recycling." *Environmental Modeling and Assessment*, vol. 9, 2004: 159-167.
5. Andrew d. Foster and Mark R. Rosenzweig, "Economic Growth and The Rise of Forests." PIER working Paper 02-028.
6. Gordon, H. Scott. "The Economic Theory of a Common-Property Resource: The Fishery." *Journal of Political Economy*, April 1954, Sections I, II, III.
7. Mitchell, Robert C. and Richard T. Carson, "Current issues in the design, administration and analysis of contingent valuation surveys." *Current Issues in Environmental Economics* (Johansson, Kristrom and Maler, eds.), Manchester University Press, 1995: 10-34.
8. Lawn, Philip A. "A Theoretical Foundation to Support the Index of Sustainable Economic Welfare (ISEW), Genuine Progress Indicator (GPI), and other related indexes." *Ecological Economics*, vol. 44, 2003: 105-118.

The Paper must:

- \* be stapled,
- \* be numbered and printed on single sided paper,
- \* have a title page with your name printed & pledge signed on it,
- \* have about **15 pages** of the text (excluding references), double-spaced,
- \* use font **12, Times New Roman**, with **1.25-inch** margins, and
- \* have proper in-text reference (everyone, please study **the MLA /APA citation rules, on pp. 109-114** of *A Pocket Style Manual, 3rd ed.*), both in-text and at the end.

The paper must consist of:

- Section 1. **Introduction**--the summary of your investigation, with the thesis statement (underline your thesis)
- Section 2. **Literature**--provide an overview of the papers you read. Explain what they are about and how they are related. The purpose of Paper I is to provide a broad picture of the existing literature and place the particular topic of your

interest.

Section 3. **Economic Analysis**--you may analyze a theoretical model, an empirical model, or a simulation model, by defining the model, solving/replicating it and interpreting the outcome. Alternatively, you can provide an extensive review of a particular policy, regulation, etc. Explain carefully in the analysis section your graphs, tables, etc. that you put in the appendix. Make explicit connections between your explanation in the text and the appendix. Use notations wisely (e.g. "Look at graph 1. Point A in graph 1 indicates...").

Section 4. **Conclusion** (include the comments on issues that are closely related to your topic but are unresolved/unexplored)

Section 5. **Appendix**

\* Graphs, tables, etc. that you need to refer to in your section 2 are to be placed in the appendix. But your verbal explanation of those must be provided in section 2, *not here*.

\* Equations can go into section 2 as part of the text. The solving process of the model must be included in here.

Section 6. **List of References**

Economics Journals you may want to try to find articles for the project:

Brookings Papers , RFF Discussion papers

Journal of Economic Literature

Journal of Economic Perspective

American Economic Review

Contemporary Economic Policies

Environmental Economics and Management

Ecological Economics

Environmental and Resource Economics

And so on.

## About Writing

Please pay particular attention to the following writing rules before submitting your paper.

\* **Citation style** -- you may follow either MLA or APA. Study carefully the rules for both in-text citation and the list of references.

\* **Paraphrasing vs. direct quotations** -- one of the major assignments of the project papers for you is to practice paraphrasing. Although the requirement for paraphrasing might vary among the three major citations formats, I ask everyone *not* to have direct quotations from the original articles, unless it is absolutely necessary. Read p. 114 of *A POCKET STYLE MANUAL* carefully to find out the specific (and very limited) occasions in which direct quotations are acceptable. You will find out that in most cases you must use your own words to summarize and paraphrase your sources--this is particularly true in economics. If you are not sure the borderline between paraphrasing and plagiarism, take a look at the examples given in the *MANUAL*. For the purpose of this project, your paraphrasing also helps you to demonstrate (to me) the depth of your understanding of the original source. Do not submit a paper full of “cuts & pastes” of the original articles in double quotation marks, and claim that it is YOUR paper. That is a pretty embarrassing thing for a college graduate to do.

\* **Paragraph writing** -- stick to the rule of one topic per paragraph. Start each paragraph with an appropriate topic sentence, and end the paragraph with the same topic. Make sure that each sentence in a paragraph is supporting the topic of the paragraph in some way.

\* **Cohesiveness:** think about the overall flow of the paper. Sentences must stick together in each paragraph, and the ordering of the topics must be logical so that your paper flows well.

\* **Casual / colloquial word choice** -- avoid too casual language. Examples are: broad and abusive use of “get to” (or “got to”), “thing”, words and phrases such as “big deal”, “wanna”, “ain’t, etc. For more details, read pp. 16-19 of *A POCKET STYLE MANUAL*.

\* **Passive voice** -- avoid passive voice whenever possible.