I. Introduction

This semester-long course will study the economics of public policy toward natural resources and the environment. It is designed primarily for advanced undergraduates in economics. Prerequisites include intermediate microeconomics and calculus.

We will start with the concepts of externalities, public goods, property rights, market failure, and social cost-benefit analysis. Within this framework, we will consider a few additional problems such as information, uncertainty, and risk analysis. The first set of applications of these tools will involve natural resources. Other applications include air pollution, water pollution, solid waste management, and hazardous substances. In addressing each of these problems, we will compare public policy responses such as administrative regulation, marketable permits, tax incentives, and direct subsidies. We will study several methods to value environmental benefits.

In the case of nonrenewable resources, such as fossil fuels, we will consider the "efficient" rate of extraction, the private market rate of extraction, and public interventions that might achieve the efficient rate. In the case of renewable resources, such as forests and fisheries, we will consider the common property problem and public policies to correct it. We will also look at the disposal of wastes, policies to encourage alternatives such as recycling, and policies to discourage other alternatives such as illegal dumping or burning.

Goals: You will learn some of the tools useful to evaluate environmental policy and proposals with respect to the sometimes-conflicting criteria of administrative and economic efficiency, horizontal and vertical equity, simplicity, certainty, and flexibility. Alternative explanations will make frequent use of algebra and occasional use of calculus.

Requirements: Short papers will be due every second week. Together, these papers will determine sixty points (30% of the total). The midterm exam will constitute 40 points (20% of the total), and the final exam will account for 80 points (40%). Attendance is mandatory, and participation in class will count for the remaining 20 points (10%). Scores out of the 200 possible points will be ranked on a relative scale, but grades will be assigned on an absolute scale. In other words, the cut-off between A's and B's will depend on how well those folks did.

Social Contract: The first requirement of this course is that you read this entire syllabus. Though lengthy, it contains rules, regulations, procedures, and due-dates that are essential for participation in the course. Because you see them listed here, you will be responsible for all requirements or assignments whether or not you hear the announcements in class. If you are
worried about potential problems, then do assignments early. No extensions will be given. If you remain in this course, I will presume that you agree to these conditions. You give up some flexibility, but you will know well in advance exactly what is expected.

Reading Material: You will have to buy one textbook (Callan&Thomas), and one packet of readings from Abel's copyshop. Two other paperback books listed below contain readings for those with further interest. Required readings from the text and packet are marked with asterisk.


II. Office Hours

Thurs.&Fri. 1:30 – 3:30 pm Phone: (512) 475-8519
BRB 2.102D, dfullert@eco.utexas.edu Home phone: 480-9347

You are always welcome to stop by my office or to call me at other times. If I am not able to meet with you right away, we can always arrange an appointment for later. The TAs are:

Conan Crum, BRB 4.116 (Mon&Tues 3:30-5:00), crum@eco.utexas.edu
RJ Briggs, BRB 4.122 (Tu 2-3:30, Th 11-12:30), briggs@eco.utexas.edu

III. Is This Course Theoretical?

You might find this course to be "theoretical," but I think of it as "conceptual." We could provide a lot of hard facts about pollution, resources, and public policy regulations. For example, we could tell you which government agencies spend how much money to provide what environmental services. I suspect that you would not find such a course to be useful, however, because the few facts or numbers that you remember will soon be out-of-date. Rather, we will try to teach techniques for evaluating public policy. You will learn concepts and methodology that should prove useful in doing policy analysis yourself. Hopefully, you will learn to think like an economist.

Thus, we might use equations with Greek letters in place of numbers, without ever giving the input numbers or the current numerical answers. Once you get an idea of how to obtain the right input numbers, you will always be able to use these techniques and derive your own current answers. No need to memorize old numbers. Some of you may not become economists, but all of you will want to read and understand what economists write.

IV. Assignments

One of the most constructive features of this course in the past has been the biweekly papers. They reinforce your learning by putting it to immediate use, they help keep everybody
up with the readings, they give you examples of the kinds of questions I am likely to ask on exams, and they give me useful feedback from students. In order to encourage succinct and incisive reasoning, your answers will be strictly limited to three typed double-spaced pages (12-point font, one-inch margins). Because I do not want to judge the quality of excuses or the quality of handwriting, no un-typed papers will be accepted.

Also, a word on joint efforts: much can be learned from your peers, and I encourage discussion of the assignments. The most effective method seems to be maximum individual effort with occasional hints from your friends. Nothing can be gained from wallowing about, if you don't have a clue about what to do next. But avoid doing entire sections of homework together, because you will only learn how to approach these problems if you get some practice at doing it alone. (More concretely, do not copy on the homeworks).

Six assignments will count for sixty points, or 30% of your total grade. Each assignment will be scored from a possible ten points. The calendar provides relevant due dates. If you miss a class when homework is distributed, be sure to get a copy from a friend or from me. Homeworks are due no later than the beginning of the class indicated. Because:

- you know about due-dates well in advance,
- you have a week for each homework,
- it should only take a couple of hours, if you're up on the readings,
- everybody has other assignments,
- and I don't want to judge the quality of excuses,

a one point penalty will apply to every late paper (up to five days late). This apparently picky approach helps avoid the more picky business of deciding what excuses qualify.

V. Exams

Do not ask me if you can move an exam. I will follow only university procedures for rescheduling examinations.

The Midterm will be held in class on Wednesday March 22. It might include a few short warm-up questions such as definitions or identification of key concepts. The longer question(s) will be similar in nature to the previous assignments. The midterm will constitute forty points, or 20% of your total grade. A review session will be held two days beforehand.

The Final Exam will be held on schedule. Again, it will probably include some short questions and some longer questions. Eighty points on the final will make up 40% of the total grade. A review session will be held two days beforehand.

VI. Calendar

The next page shows the whole semester at a glance, so you might want to mark your other assignments and exams on it.
### Spring 2006 Calendar

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VII. Readings

To ensure a fairly uniform starting place, students should already be familiar with concepts like the Edgeworth box diagram, marginal conditions for Pareto Optimality, social welfare functions, economic efficiency, and the theory of the second best. These concepts are discussed in all intermediate microeconomics textbooks, such as Pindyck and Rubinfeld's *Microeconomics*, or Varian's *Intermediate Microeconomics*. Please re-read corresponding sections from your text.

Separate topics are not shown on the calendar because we will be flowing from one to another. I do not wish to be constrained on the timing of each topic: we will cover about 15 topics in 26 lectures. Thus, the average topic will take only one or two lectures. You should keep up on readings accordingly, and always be prepared to start the next topic.

1. Introduction: The Role of Government

*Callan&Thomas, Chapter 1.


2. Economic Efficiency

*Callan&Thomas, Chapter 2.


3. Public Goods and Externalities

*Callan&Thomas, Chapter 3.


4. **Command and Control Policies**

*Callan&Thomas, Chapter 4.

*Freeman, A. Myrick, "Environmental Policy Since Earth Day I: What Have We Gained?, *Journal of Economic Perspectives* 16(1), Winter 2002, 125-46 (Ch. 30 in EESR).


5. **Market-Based Incentives**

*Callan&Thomas, Chapter 5.


6. **Risk Analysis**

*Callan&Thomas, Chapter 6.


7. **The Measurement of Benefits**

*Callan&Thomas, Chapter 7.


Diamond, Peter A. and Jerry A. Hausman, "Contingent Valuation: Is Some Number Better than No Number?", *Journal of Economic Perspectives* 8 (4), Fall 1994, 45-64 (Chapter 12 in EESR).

8. The Cost of Environmental Protection

*Callan&Thomas, Chapter 8.


9. Benefit-Cost Analysis

*Callan&Thomas, Chapter 9.


10. Renewable Resources


11. Exhaustible Resources


12. Air Pollution

*Callan&Thomas, Chapters 10, 11, and 12.


13. Water Pollution

*Callan&Thomas, Chapters 14, 15, and 16.


*Callan&Thomas, Chapters 17, 18, and 19.


15. Global Warming

*Callan&Thomas, Chapters 13, 20, and 21.


16. Critical Habitat and Endangered Species


17. Political Economy


18. Wetlands


19. Not In My Back Yard (NIMBY)


20. Superfund Toxic Waste Clean-Up Program


21. Poverty and the Environment
