Michigan State University
Department of Agricultural Economics

SYLLABUS
Agricultural Economics 829
Economics of Environmental Resources
Sandra S. Batie
Fall 2004

3:00 p.m. - 5:50 p.m., Monday, Room 49 Agriculture Hall

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Course Website: http://www.msu.edu/course/aec/829

Course Description: Economics principles related to environmental conflicts and public policy alternatives. Applications to water quality, land use, conservation, development, and global environmental issues.

Course Objectives:

1. To understand the economics of why environmental problems occur.
2. To explore the concept of efficiency and the efficient allocation of pollution control and pollution prevention decisions.
3. To predict the consequences of alternative environmental policies.
4. To understand how economic theory explains decisions made by those who own and control natural resources and/or influence environmental quality.
5. To understand the techniques economists have used to measure the benefits and costs of public involvement in the management of environmental resources.
6. To explore the limitations of economics with respect to understanding, explaining, and predicting as it pertains to environmental issues and policy.
7. To explore, compare, and contrast neoclassical and institutional approaches to environmental economics.

Note: I use microeconomic theoretical concepts in this course. If you do not have this theoretical background, let me know.

This course introduces the major contemporary questions, concepts, and policy issues of environmental economics. We will focus on environmental economics and not natural resource economics. (PRM/RD 460 is available for graduate credit and emphasizes natural resource economics.) Graduate students from a wide number of majors take this course, including agricultural economics, resource development,
forestry, fisheries and wildlife, parks and recreation resources, environmental
toxicology, business and political science. Because of the diverse background of
students, the course is taught at an intermediate level of micro economics. More
advanced material is available in many of the readings, but advanced knowledge is not
required. Some knowledge of or interest in contemporary environmental issues is
assumed. Knowledge of undergraduate environmental and resource economics is not
assumed, but is helpful. Students who have already taken a graduate level course in
environmental and resource economics are encouraged to enroll in AEC 923 in lieu of
AEC 829.

The course is organized around the major contemporary questions of environmental
and natural resource economics. A set of readings relevant to each question is also
provided. The readings discuss core concepts and applications to the major
environmental and natural resource issues. Classes are used to provide additional
information and to discuss answers to the questions. The objective is to be able to
answer the questions, understand the core concepts, and apply them to environmental
and natural resource issues.

**Textbook:** We will rely on *Natural Resource and Environmental Economics*, Roger
Perman, Yue Ma, James McGilvray, and Michael Common, London and New York:
Longman, 3rd Edition, 2003, and it is available at the Student Book Store (SBS) on
Grand River Avenue. Readings will be available for check out in Room 219 Agriculture
Hall. You may check out a book of readings for a 24 hour period. Please return on time
so all your colleagues may have access to them as well. Some of these readings can
also be downloaded from MSU Library's electronic databases.

**Voluntary Review Sessions:** After each major topic is concluded, I will conduct a
voluntary review session on a “To Be Arranged” basis, if there is sufficient interest.

**Evaluation:** Final grades for the course will be based on performance on a team
presentation (15%), two assignments (30%), a midterm exam (25%), a final exam
(25%), and participation in class discussions throughout the semester (5%). Students
are encouraged to discuss material covered in class with others, and discussion of
essays and assignments is acceptable. However, each student is required to submit an
original assignment or exam. The project will be a team effort.

**Dates to Remember:**

- **No Class:** September 6, 2004
- **Midterm:** Monday, October 11th, 3-5:50 pm
- **Final Exam:** Tuesday, December 14th, 3-5:00 pm
Tentative Course Outline

I. AN INTRODUCTION TO RESOURCE AND ENVIRONMENTAL ECONOMICS

Readings:
Perman, et al., Chapter 1

Questions for Discussion:
What are Resource, Environmental, and Ecological Economics, and how do they differ from production economics?

How is the economy linked to the environment?

What are the opposing views about whether and to what extent environmental resources are becoming more scarce? What has been the history of economic thought on this issue?

What is meant by the material balance principle?

II. SUSTAINABILITY AND SUSTAINABLE DEVELOPMENT

Readings:
Perman, et al., Chapters 2, 3 (read chapter 3, but we will not discuss), and 4


Questions for Discussion:
How are economic scale, allocation, and distribution related to environmental degradation? What are the implications for the types of economic analysis that would be useful in environmental policy decisions?

What are the key features of the concept of sustainable development? What steps need to be taken to implement the sustainable development concept?

What is the relationship between poverty and environmental quality? What are the environmental policy implications? How can equity considerations be incorporated in environmental policy evaluation?

What is the relationship between assumptions with respect to substitution of capital with respect to sustainable development concepts?
III. WELFARE ECONOMICS

Readings:

Perman, et al., Chapter 5


Questions for Discussion:

What are the major types of market failures that affect environmental pollution and sustainable development? How do they affect environmental pollution and sustainable development?

How are transaction costs and externalities related to one another? What are the policy implications of this relationship?

What are the major types of property rights failure that affect environmental quality and sustainable development? What are their effects? How can property rights be changed to enhance environmental quality?

What is an institution, and how are institutions central to resource and environmental issues?

IV. ECONOMICS OF POLLUTION CONTROL AND POLLUTION POLICY: TARGETS AND INSTRUMENTS

Readings:

Perman, et al., Chapters 6 and 7


Questions for Discussion:

Under what circumstances will the economically efficient level of pollution be zero? Under what circumstances would the optimal amount of abatement be zero?

How do liability laws control environmental pollution?

How does the command and control approach (CAC) meet ambient pollution standards?

How do taxes on emissions, inputs, and outputs meet ambient pollution standards?

How do marketable permits meet ambient pollution standards? Is there a difference in your answer if the pollution is nonpoint versus point source?

What is the abatement cost-effectiveness of CAC, emissions taxes, and marketable permits in meeting ambient pollution standards?

What are the enforcement costs of CAC, emissions taxes, and marketable permits in meeting ambient pollution standards?

What are agency decision-making costs of CAC, emissions taxes, and marketable permits in meeting ambient pollution standards?

What are the effects of CAC, emissions taxes, and marketable permits on future research and development of pollution control technology?

V. POLLUTION POLICY WITH IMPERFECT INFORMATION

Readings:

Perman, et al., Chapter 8

Questions for Discussion:

How well do CAC, emissions taxes, and marketable permits perform when there is uncertainty about abatement and damage costs?
VI. INTERNATIONAL ENVIRONMENTAL PROBLEMS

Readings:

Perman, et al., Chapter 10


Questions for Discussion:

What are the major problems involved in addressing transfrontier and global environmental problems and why do they occur? What can be done about them?

What are the major types of policy failures that affect environmental quality and sustainable development? How do they affect environmental quality and sustainable development? Why do they occur? How can economic research help address these policy failures?

VII. PROJECT APPRAISAL

Readings:

Perman, et al., Chapters 11, 12, and 13


Questions for Discussion:

What is the difference between cost-benefit analysis and cost-effectiveness approaches to setting ambient pollution standards?

What is the difference between the safe minimum standard and the precautionary principle?

What are the different methodological approaches used by economists in project appraisal?
VIII. ECONOMICS OF POLLUTION PREVENTION (CORPORATE ENVIRONMENTAL MANAGEMENT)

Readings:


Questions for Discussion:

What is Corporate Environmental Management (CEM) and what are underlying motivations for firms to practice it? Can economic theory explain CEM? What is the relationship between CEM and induced innovation?

IX. ACCOUNTING FOR THE ENVIRONMENT

Readings:

Perman, *et al.*, Chapter 19