

***ECON. 235: ENVIRONMENTAL AND RESOURCE ECONOMICS
(FALL 2003)***

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Office Hours: T, W & F (2:30 to 3:30p) or by APPOINTMENT

COURSE DESCRIPTION AND OBJECTIVES:

This is an introductory-level course in environmental and resource economics. It is primarily designed for sophomores and juniors who want to study environmental and resource concerns with an interdisciplinary focus. More specifically, the course attempts to incorporate basic principles of both *microeconomics* and *ecology* that are essential for a comprehensive understanding and critical assessment of the human's historical struggles to "coexist" with the natural environment. These ecological and economic principles are also used to shed light on some contemporary and controversial environmental policy issues.

Right from the outset it should be understood that this course is *not* aimed at a study of a specific environmental issue. Instead, the course intends to delve into the theoretical underpinnings that are critical to a clear understanding of most contemporary environmental and natural resource problems. Thus, the emphasis is on a systematic development of theoretical principles and conceptual frameworks essential for a comprehensive analysis of environmental and natural resource issues and the assessments of alternative environmental policy instruments, in general.

The course is organized with *four* major objectives in mind: (1) To introduce students to the basic economics and ecological principles and theories essential to the understanding of a wide variety of contemporary environmental and natural resource management problems. (2) To acquaint students with competing public policy instruments that could be used to ameliorate pressing local, national and global environmental and resource concerns. (3) To carefully and systematically examine the nature of ecological limits and their implications to long-term human material progress, that is, sustainable development. (4) To provide students with a forum to discuss, in both formal and informal settings, major controversial and contemporary environmental issues and problems. *Prerequisite:* Eco. 105.

REQUIRED TEXT AND OTHER READINGS

Hussen, Ahmed, M., *Principles of Environmental Economics: Economics, Ecology and Public Policy*, Routledge, 2000.

Others: Several other supplementary reading assignments are placed on reserve in the Library. A complete list of the reading materials and *web sites* of interest for this course is provided in the last section of this syllabus.

COURSE OUTLINE:

PART I: Analytical Foundation of Environmental and Resource Scarcity: The Neo-Classical Perspective (week 1)

[Reading: *Intro.*, pp. xxvii – xxxi; Chpt. 1, pp. 3-16; Chpt. 3, pp. 54-59]

- What is environmental and resource economics all about?
- The concept of resources and resource scarcity: The neo-classical economic perspective

PART II: The Concept of Natural Resources: An Ecological Perspective

(week 2) [Reading: Chapter 4, pp. 65-86]

- Ecology: The economics of nature
- The Ecosystem: structure and function
- Ecodynamics: succession, equilibrium, stability, resilience, complexity
- The Laws of Matter and Energy
- The Basic Lessons of Ecology

PART III: Fundamentals of the Economics of Environmental Resources

(Week 3) [Reading: Chapter 5, pp. 87-112]

- The Economic Process and the Assimilative Capacity of the Natural Environment
- Common Property Resources, Externalities and Market Failure
- Internalizing Externalities: The Pigouvian Tax
- The Macroeconomic Effects of Environmental Regulations

PART IV: The Economic Theory of Pollution and Its Control (weeks 4 & 5)
[Reading: Chapters 10, 11, 12, & 13; pp. 199 – 286]

- The Determinants of the Optimal Level of Pollution and Their Implications
- Alternative Pollution Control Policy Measures
- The Challenges of Controlling Transboundary Environmental Pollution

PART V: Valuing the Environment (week 6 & 7)
[Reading: Chpts. 14 & 15; pp. 287 – 331]

- The Various Economic Methods for Measuring Environmental Benefits
- Cost-Benefit Analysis of Environmental Projects
- Intergenerational equity
- Other Methods of Valuing the Environment

PART VI: Natural Resource Scarcity and the Limits to Economic Growth
(weeks 8 & 9) [Reading: Chapters 6, 7, 8 and 9; pp. 113-200]

- The Malthusian Growth Doctrine
- The Neoclassical Growth Paradigm
- The Ecological Economics School Perspective
- Sustainable Economic Development

PART VII: Population, Development and Environmental Degradation in the Developing World (Week 10) [Reading: Chapter 18, pp. 395-419]

- Population-Resource-Environmental Interrelationship
- Globalization, Sustainable Development and Poverty Alleviation
- Sustainable Development Practices and Strategies in the Developing World
- The Johannesburg Conference on Sustainable Development

GRADING POLICIES: The final grade for this class will be computed on the

following basis:

Midterm Exam	30%
Final Exam	40%
Paper (Project)	20%
Class Discussion	<u>10%</u>
	100%

Both the mid-term and the final examinations will consist of objective questions and short essays designed to test your understanding of theoretical concepts, models, and factual materials covered in class lectures and assigned readings. No make-up exam will be given.

The *classroom project* consists of a ten to fifteen pages paper dealing with some contemporary and pressing environmental and natural resource issue(s). The scope of the project can be local, regional, national, or global. An early start of this project is strongly recommended.

The grade for “class discussion” is awarded on the basis of class attendance and the efforts demonstrated to participate in class discussions.

READING LIST:

This reading list contains articles and book chapters that are placed on reserve in the library for the purpose of class discussions. Most of these are classic articles and a must reading!

For Class Discussions:

Boulding, K.E., (1966) “The Economics of the Coming Spaceship Earth,” in H. Jarrett (ed.) *Environmental Quality in a Growing Economy*, Washington D.C.: Johns Hopkins University Press.

Coase, R. (1960) “The Problem of Social Cost,” *Journal of Law and Economics* 3: 1-44.

Georgescu-Roegen, N. (1993) “The Entropy Law and the Economic Process,” in H. E. Daly and K. Townsend (eds) *Valuing the Earth: Economics, Ecology, Ethics*, Cambridge, Mass.: MIT Press.

Goeller, H.E. and Weinberg, A. M. (1976) "The Age of Substitutability: What Do We Do When the Mercury Runs Out?" *Science* 191: 683-9.

Hardin, G. (1968) "The Tragedy of the Commons," *Science* 162: 1243-8.

Krutilla, J. V. (1967) "Conservation Reconsidered," *American Economic Review* 57, 4: 787-96

Solow, R. M. (1974) "The Economics of Resources or the Resources of Economics," *American Economic Review* 24: 1-14.

----(1993) "Sustainability: An Economist's Perspective," in R. Dorfman and N. Dorfman (eds.) *Selected Readings in Environmental Economics*, 3rd edn., New York: W.W. Norton.

White, L., Jr. (1967) "The Historical Roots of Our Ecological Crisis," *Science* 55: 1203-7.

WEB SITES OF INTEREST:

1. www.wri.org/

The homepage for World Resource Institute (WRI). WRI is a highly reputable environmental think tank. It provides a wealth of information, ideas and solutions to emerging global and environmental problems (such as, climate change, biodiversity, habitat destruction, over fishing, and so on).

2. www.rff.org/

The homepage for Resources for the Future (RFF), Inc. An organization known for its non-partisan high quality environmental and natural resource economics research and policy analysis. RFF receives a very high mark for its publications on damage cost to the environment and health (externalities) and cost-benefit (as well as cost-effectiveness) analysis. Although non-partisan the publications of this organizations indicates strong methodological affiliation with mainstream economics.

3. www.prb.org/

The homepage for Population Reference Bureau (PRB). The PRB prides itself for providing timely and objective information on U.S. and international population trends and their implications.

4. www.unfpa.org/index.htm

The homepage for the United Nations Population Fund (UNFPA). The UNFPA is the largest internationally funded source of population assistance to developing countries. Excellent source of information relating to issues on population and development, reproductive health including family planning and sexual health, gender equality and women's empowerment.

5. www.epa.gov/

The homepage for the United States Environmental Protection Agency (EPA). The EPA was established in 1970 with a mandate to monitor, set and enforce environmental standards that are consistent with ensuring the protection of the natural environment. This website is an excellent source for the latest information in environmental policies in the United States.

6. www.unep.org/

The homepage for the United Nations Environment Programme (UNEP). Contains invaluable information on international environmental legal instruments, conventions, and research reports on the state of global environment.

7. www.energy.gov/

The homepage for the United States Department of Energy (DOE). A good source for energy data, such as efficiency and productivity of energy use, energy prices, and alternative energy technologies. It also provides information on the environmental impacts of energy, energy conservation, and the latest energy policy pronouncements of the United States government.

8. www.undp.org/

The homepage for the United Nations Development Programme (UNDP). The UN's principle provider of development advice, advocacy and grant support. The website provides valuable information on international efforts to reduce poverty in developing countries through capacity building. It also provides information on human rights and HIV/AIDS.

9. www.worldwatch.org/

The homepage for the Worldwatch Institute, an independent nonprofit environmental resource organization. The primary mission of this organization's numerous periodical publications is to provide government agencies and the public at large with an in-depth quantitative and qualitative analysis of the major issues affecting prospects for a *sustainable society*. The *Annual State of the World*, which is now published in twenty-seven languages, is the most widely used of all the papers published by this organization. Noted for its Neo-Malthusian perspectives.

10. www.oecd.org/env/

A web site for the Organization for Economic Co-operation and Development (OECD). This organization presently consists of 30 member countries, and all the major economically advanced nations are members of this organization. Provides good information on the state of the global economic development and the environment from the prospective of the "rich" nations. This site is also a good source of information for international economic data, globalization and its impact on trade and environment.

11. www.worldbank.org/

The homepage for the World Bank Group. This site provides detailed data on world development indicators, external debt, foreign exchange reserves, and international development projects intended for the reduction of poverty, and trade and development, in general. Comparable information can be obtained by a visit of the homepage website of the International Monetary Fund (IMF), www.imf.org/.

12. <http://www.ulb.ac.be/ceese/meta/sustvl.html>

The web site page is maintained by the Center for Economic and Social Studies on the Environment (CESSE) located at Universite Libre de Bruxelles. Excellent source for getting the latest information on indicators of sustainable development. This page also provides a link to a number of other sustainable development web site locations.

Another web site on sustainable development that I recommend is:
www.colby.edu/personal/t/thtieten/sustain.html