

ECOLOGICAL ECONOMICS (SPRING SEMESTER 2002)

CLASS LOCATION

Virginia Tech Northern Virginia Center, 7054 Haycock Road, Falls Church, Virginia

MEETING TIMES

Monday evenings, 7:00-9:45

INSTRUCTOR

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COURSE DESCRIPTION

Ecology is the natural science that deals with relationships among all organisms and their environments. Ecological studies have traditionally focused on interpreting the non-human world and have provided little explicit application to human society. Economics is the social science that deals with the production, distribution, and consumption of human goods and services. Traditional or "neoclassical" economics has often disregarded ecological principles, thus leading to ecologically untenable policy implications.

Ecological economics fuses ecology and economics to assess the capabilities of natural ecosystems to support economic systems. Ecological economics interprets economic systems as an evolutionary function of the physical and biological environment. Conversely, ecological economics assesses the effects of human economies on the natural world. Ecological economics rests upon a foundation of ecological principles, producing policy implications that are often quite distinct from those of neoclassical economics.

This course provides a historical overview of various schools of economic thought, presents the major principles required to fuse ecology with economics, and helps students to analyze economic policies under the lens of ecological reality. Particular attention is paid to economic growth theory and policy as it pertains to the sustainability of human society. This is a transdisciplinary course, incorporating relevant principles and practices from political science, psychology, and physics in addition to ecology and economics. Students are not required to construct mathematical models. The course is organized in 4 modules (following an introductory session): 1) ecological principles; 2) economic principles; 3) integrating ecological and economic principles, and; 4) policy and political economy.

GOAL

To provide students with a transdisciplinary understanding of the material welfare of human societies.

OBJECTIVES

Upon completion of the course, students will be able to:

- Provide a historical sketch of economic thought in the post-mercantile world.
- Using examples, describe why the principles of ecology are relevant to economics.
- Identify the laws of thermodynamics and discuss how they affect the development of ecosystems and economies.
- Provide a general description of the scope and philosophy of neoclassical economics.
- Identify the factors of production and discuss how their relative importance has evolved in economic theory.
- Discuss the strengths and weaknesses of neoclassical economics in terms of its ecological foundations.

- Describe the trophic structure of the human economy.
- Identify the sources of economic growth and discuss the interaction among these sources.
- Describe the status and trends of the factors of production.
- Explain why biodiversity conservation has become a function of macroeconomic policy.
- Identify the goals and most prominent policies of neoclassical and ecological economics.
- Describe the unique political pressures placed upon the economics profession and how these affect the development of economic theory and policy.
- Describe the economic policies and prominent political aspects of the steady state economy.
- Define the term “political economy” and propose a model of political economy conducive to a sustainable society.

CALENDAR

January 14	Introduction
	Development of economic thought
	<ul style="list-style-type: none"> • physiocratic • classical • Marxist • neoclassical and Keynesian <ul style="list-style-type: none"> ○ natural resources economics ○ environmental economics • ecological
<i>Module 1:</i>	<i>Ecological Principles</i>
January 21	Adaptation and evolution
	Niche breadth and expansion
	Competitive exclusion
January 28	Population dynamics
	Laws of thermodynamics
	Trophic levels
	Discussion of ecological principles
<i>Module 2:</i>	<i>Economic Principles</i>
February 4	Neoclassical man
	Households and firms
	Markets and Prices
	Factors of production

February 11	Neoclassical economic growth theory Substitutability of resources Productive efficiency Human capital Technological progress Discussion of economic principles
<i>Module 3:</i>	<i>Integrating Ecology and Economics</i>
February 18	(Quiz 1, Modules 1 and 2) Economic man as a biological species Human economy as a subset of global ecosystem Natural capital as a factor of production
February 25	Structural economics Human economy, non-human economy, and competitive exclusion
March 4	Status and trends of human populations and capital Status and trends of natural capital Status and trends of man-made capital
March 11	The limits to growth debate Technological progress, economic carrying capacity, and biodiversity conservation Ecological integrity and ecosystem health Discussion of ecological economics principles
<i>Module 4:</i>	<i>Policy and Political Economy</i>
March 18	(Quiz 2, Module 3) Neoclassical goals and policies Public choice theory and the free market Trickle-down economics Corporate libertarianism
March 25	Ecological goals and policies Indices of welfare and natural capital accounting Government, taxes, and tariffs

	Fiscal and monetary reforms
April 1	John Stuart Mill and the stationary state
	Henry George and the single tax
	Capitalist/communist race
	Keynesian revolution
	Political influence and economics
April 8	Herman Daly and the steady state economy
	Maslow's hierarchy of needs and the steady state revolution
	Discussion of neoclassical vs. ecological goals and policies
April 15	Models of political economy
	<ul style="list-style-type: none"> • United States • China • Sweden • Japan
	Discussion of models of political economy
April 22	Presentations on political economy
April 29	Presentations on political economy
	Discussion and review for final exam
May 6	Final exam

COURSE REQUIREMENTS

- Attend class sessions unless excused and except for emergencies.
- Participate in discussions.
- Read all assigned materials.
- Draft a 12-page paper on economic policy that demonstrates an understanding of the themes discussed in the course. The paper may critique an established or proposed policy or present a proposal for a new policy. The paper will have 1-inch margins on all sides and the font will be no smaller than 10 nor larger than 12. Twelve pages of text are required; additional pages for literature citations are allowed. A title page is not expected.
- Give a presentation on the political economy of a nation or region with respect to its sustainability. (The presentation length will be determined based upon the size of the class but will be 10-20 minutes.)

GRADING

Attendance: 10%
Participation: 10%
Quizzes: 5% each
Paper: 25%
Political economy presentation: 15%

Final exam: 30%

REQUIRED TEXTS

- Krishnan, R., J. M. Harris, and N. R. Goodwin, editors. 1995. *A survey of ecological economics*. Island Press, Washington, D.C.
- Heal, G. 2001. *Nature and the marketplace*. Island Press, Washington, D.C.
- Czech, B. 2000. *Shoveling fuel for a runaway train: errant economists, shameful spenders, and a plan to stop them all*. University of California Press.
- Kingdon, J. 1993. *Self-made man: human evolution from Eden to extinction?* John Wiley and Sons, New York, New York.
- Gaffney, M., and F. Harrison. 1994. *The corruption of economics*. Shephard-Walwyn, London, United Kingdom.

READING ASSIGNMENTS

Read by January 21:

Kingdon, pp. 1-93.

Read by January 28:

A Survey of Ecological Economics, pp. 169-232.

Self-made Man, pp. 94-165.

Read by February 4:

Nature and the Marketplace, pp. xyxy.

Read by February 11:

Handout from Mankiw's macroeconomics text.

Solow, R. M. 1974. The economics of resources or the resources of economics. *American Economic Review* 64(2):1-14.

Read by February 18:

Self-made Man, pp. 166-254.

Shoveling Fuel for a Runaway Train, pp. 17-43.

Read by February 25:

Czech, B. 2000. Economic growth as the limiting factor for wildlife conservation. *Wildlife Society Bulletin* 28(1):4-14.

Self-made Man, pp. 255-332.

Read by March 4:

Sustainable development in the United States, pp. 21-91

Czech, B., P. R. Krausman, and P. K. Devers. 2000. Economic associations among causes of species endangerment in the United States. *BioScience* 50(7):593-601.

Read by March 11:

Czech, B. Technological progress, economic carrying capacity, and biodiversity conservation (under review).

Read by March 18:

Nature and the Marketplace, pp. xyxy.

Read by March 25:

A Survey of Ecological Economics, pp. 233-280, 327-364.

Read by April 1:

Shoveling Fuel for a Runaway Train, pp. 44-108.

The Corruption of Economics, pp. xyxy.

Read by April 8:

Daly, H. E. 1993. Introduction to essays toward a steady-state economy. Pages 11–47 in H. E. Daly and K. N. Townsend, editors. *Valuing the earth: economic, ecology, ethics*. Massachusetts Institute of Technology, Cambridge, Massachusetts.

Or else I could use Entropy, Growth, and the Political Economy of Scarcity, which is an excellent summary of the steady state economy. Should be in folder for Week 11.

Shoveling Fuel for a Runaway Train, pp. 109-182.

Read by April 15:

Handout from *Models of Political Economy*.

Read by April 22:

Handout from *Models of Political Economy*.

Read by April 29:

Other readings to be announced.