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

Brian Czech, Adjunct Professor, Virginia Tech Northern Virginia Center, home phone 703-998-5288, email brianzech@juno.com. Office hours by appointment.

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

• physiocratic
• classical
• Marxist
• neoclassical and Keynesian
  o natural resources economics
  o environmental economics
• ecological

Module 1: Ecological Principles

January 21 Adaptation and evolution
Niche breadth and expansion

Competitive exclusion

January 28
Population dynamics
Laws of thermodynamics
Trophic levels
Discussion of ecological principles

Module 2:  Economic Principles

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

Module 3: Integrating Ecology and Economics

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

Module 4:  
Policy and Political Economy

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

• 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


READING ASSIGNMENTS

Read by January 21:

Kingdon, pp. 1-93.

Read by January 28:


_Self-made Man_, pp. 94-165.

Read by February 4:


Read by February 11:

Handout from Mankiw’s macroeconomics text.

Read by February 18:

_Self-made Man_, pp. 166-254.

_Shoveling Fuel for a Runaway Train_, pp. 17-43.

Read by February 25:


Read by March 4:
Sustainable development in the United States, pp. 21-91

Read by March 11:

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

Read by March 18:


Read by March 25:


Read by April 1:

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

Read by April 8:


**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.