Syllabus

ECOLOGICAL ECONOMICS
In class: NR 5834 (CRN 17614) / Online: NR 5834 (CRN 17615)
Northern Virginia Center
Virginia Polytechnic Institute and State University
College of Natural Resources

Spring Semester 2010

CLASS LOCATION

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

MEETING TIMES

Wednesday evenings, 7:00-9:45 PM

INSTRUCTOR

Brian Czech, Visiting Professor, National Capitol Region, Virginia Tech, cellphone: 703-901-7190, email: czech@vt.edu. 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, in large part, 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 and management of natural resources. 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.

GOAL

To provide students with a transdisciplinary understanding of the ecological and economic sustainability 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 economic 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 and other natural resources 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 and uses of natural resources.

CALENDAR

January 20 Introduction to Course

Historical background

- physiocratic
- classical
- Marxist
- neoclassical and Keynesian
  - natural resources economics
  - environmental economics
- ecological

Module 1: Introduction to Ecological Economics

January 27 Why study economics?

The fundamental vision

February 3 Ends, means, and policy

Module 2: The Containing and Sustaining Ecosystem

February 10 The nature of resources and the resources of nature

Abiotic resources

February 17 Biotic resources

From Empty to Full World

Module 3: Microeconomics

February 24 **(Quiz 1, Modules 1 and 2)**

The basic market equation

Supply and demand

March 3 Market failures

March 10 Spring Break

Module 4: Macroeconomics

March 17 Macroeconomic concepts: GNP and welfare

Money

March 24 Distribution

IS-LM Model

Module 5: International Trade

March 31 **(Quiz 2, Modules 3 and 4)**

Globalization

International flows and macroeconomic policy

Module 6: Policy

April 7 General policy design principles

Sustainable scale

April 14 Just distribution

Efficient allocation

Module 7: Political Economy

April 21 Economic politics

The iron triangle

Steady state revolution

April 28 Models of political economy

- United States
- China
- Sweden
- Japan

Discussion of models of political economy

May 5 Presentations on political economy

May 12 Final exam

COURSE REQUIREMENTS

- Attend class sessions unless excused and except for emergencies. (Not applicable to online students.)

- Participate in discussions (via Blackboard for online students).

- **Read all assigned materials. This is of utmost importance for this course.**

- Draft a term paper describing a policy that would lead toward the establishment of a steady state economy. For length and formatting criteria see the Natural Resources Program Term Paper Guidelines.

- Give a presentation on the political economy of a nation or region with respect to its sustainability. (Online students prepare a slideshow and present it to the instructor via teleconference.)

GRADING

Attendance: 10% (not applicable for online students)
Participation: 10% (20% for online students)
Quizes: 10% each (20% of total)
Paper: 25%
Political economy presentation: 10%
Final exam: 25%

REQUIRED TEXTS

Daly, H. E., and J. Farley. 2003. *Ecological economics: principles and applications*. Island Press, Washington, DC.

Czech, B. 2000. *Shoveling fuel for a runaway train: errant economists, shameful spenders, and a plan to stop them all*. University of California Press.

READING ASSIGNMENTS

Note: Other readings may be announced.

Read by January 27:

Daly and Farley Preface, Introduction and Chapter 1.

Read by February 3:

Daly and Farley, Chapters 2-3

Czech, B. 2001. Incorporating nonhuman knowledge into the philosophy of science. *Wildlife Society Bulletin* 29(2):665-674.

Read by February 10:

Daly and Farley, Chapters 4-5

Peak Oil primer (http://www.energybulletin.net/primer.php)

Read by February 17:

Daly and Farley, Chapters 6-7

Czech, B. 2008. Prospects for reconciling the conflict between economic growth and biodiversity conservation with technological progress. Conservation Biology 22(6):1389-1398.

Read by February 24:

Daly and Farley, Chapters 8-9

Read by March 3:

Daly and Farley, Chapters 10-12

March 10: Spring Break

Read by March 17:

Daly and Farley, Chapters 13-14

Czech, B. 2003. Roll over, Adam Smith: the "new economy of nature" overlooks the origins of money. *Bioscience* 53(2):180-183.

Read by March 24:

Daly and Farley, Chapters 15-16

Read by March 31:

Daly and Farley, Chapters 17-19

Read by April 7:

Daly and Farley, Chapters 20-21

Czech, B. 2006. Steady state economy. Encyclopedia of Earth. Eds. T. Tietenberg et al. National Council for Science and the Environment, Washington, DC. (http://www.eoearth.org/article/Steady_state_economy)

Read by April 14:

Daly and Farley, Chapters 22-23 and "Looking Ahead"

Read by April 21:

Shoveling Fuel for a Runaway Train, Part 1

Read by April 28:

Shoveling Fuel for a Runaway Train, Part 2

GRADUATE HONOR CODE

The tenets of the Virginia Tech Graduate Honor Code will be strictly enforced in this course. All students will be required to sign a declaration stating that they have read the graduate honor code, that they understand the graduate honor code, and that they will abide by the letter and spirit of the Graduate Honor Code. The Graduate Honor Code is found at http://filebox.vt.edu/studentinfo/gradhonor/. Click on GHS Constitution.
Further information, including definitions, can be found at http://filebox.vt.edu/studentinfo/gradhonor/.

SPECIAL ACCOMMODATIONS

If you need adaptations or accommodations because of a disability (learning disability, attention deficit disorder, psychological; physical, etc.), if you have emergency medical information to share with the instructor, or if you need special arrangements in case the building must be evacuated, please make an appointment with the instructor as soon as possible. Office hours are noted above.

COURSE EVALUATIONS

In the spirit of continuous improvement, the instructor seeks ways to improve this course and values your input. To that end, you will be asked to complete an informal evaluation mid-term and at the end of the semester as well as a formal evaluation. At any point during the course, your suggestions and comments are most welcome.

WEATHER LINE

For weather cancellations, please check www.ncr.vt.edu and the Weather Alert Line 703-538-8325.