

# Global, Historical, and Cultural Perspectives: Topics, Trends and Themes: Natural Resource Economics and Sustainable Development

## **Course proposed by Robert Yentzer**

This course addresses topics that are important for understanding a compelling global issue - "sustainable development." From the bleakest perspective, sustainable development refers to a rate of economic growth temperate enough to avoid the future collapse of living standards caused by ecosystem damage, natural resource depletion and environmental degradation. Obviously, this issue arouses passionate debate, involving hardened positions at the extremes. For the sake of promoting rational discourse, this course is committed to a scientific treatment of the subject matter. Many topics will be informed by concepts from disciplines outside of economics, including physics, ecology and philosophy.

Policy evaluation is emphasized so that students can learn to apply normative economics to solving natural resource problems. Case studies of natural resource problems and policy-options will be presented. Students will form collaborative networks to analyze selected case studies and formulate solutions.

**Course Outline**  
**ECON 152**  
**Natural Resource Economics and Sustainable Development**  
**2 semester Hours**

**The Community College of Baltimore County**

**Description**

**Natural Resource Economics and Sustainable Development**

Covers important theoretical issues such as sustainable development and the allocation of non-renewable resources to future generations; examines renewable and exhaustible energy resources, water scarcity, over harvesting of fisheries and forests, wetlands, recyclable resources, population growth and policy options for a sustainable future.

Prerequisite: RDNG 052, ENGL 052, ESOL 052, MATH 081.

**Overall Course Objectives**

Upon completion of this course the student will be able to:

1. Distinguish between physical limits and economic scarcity. (I; 1, 2, 3)
2. Apply the concept of economic scarcity to the case of natural resources and various indicators of emerging resource scarcity. (I; 1, 2, 3)
3. Contrast economists' utilitarian interpretation of natural resources with the view that the economy is part of the natural ecosystem, subject to ecological limits. (I, V; 1, 2, 3)
4. Differentiate natural resources in terms of renewability, recyclability and storability. (I; 1, 2)
5. Describe the current state of selected natural resources in terms of stocks, reserves, global distribution, economic value, ownership patterns, ecosystem significance and rate of consumption or depletion. (I, IV, VI; 1, 2, 3)
6. Explain the role of markets in allocating scarce resources, and assess market outcomes in terms of efficiency and equity criteria.. (I, V; 1, 2)
7. Analyze the causes of natural resource problems in terms of perverse incentives, market failures and government failures. (I, V; 1, 2)
8. Relate the treatment of natural resources to patterns of ownership-rights (private property, common property, and open-access). (I, V; 1, 2)
9. Analyze the problem of allocating resources across generations in terms of user cost, economic rent, present value, and discount rate. (I, III, V; 1, 2)

10. Critically review definitions of sustainability and sustainable development. (I, IV, V, VI; 1, 2)
11. Compare and contrast different positions in the scientific debate concerning population growth, economic growth, sustainable development, and biophysical limits. (I, II, V; 1, 2)
12. Explain theoretical issues in the valuation of environmental resources and apply empirical methods of valuation. (I, V; 1, 2)
13. Assess market-based, command-and-control, and other policy approaches for managing, allocating, and conserving selected natural resources. (I, V; 1, 2)
14. In collaboration with other students, assess two selected case studies and formulate and justify policy recommendations. (II, III, IV, V, VI; 2, 3, 4)

## **Major Topics**

### A. Introduction

1. Relationship between the economic system and the environment.
2. Definition and taxonomy of resources
  - a. Factors of production and "natural capital"
  - b. Renewability, storability, recyclability.
  - c. Reserves
3. Indicators of emerging resource scarcity and overview of current status of world resources.
4. Population, poverty, economic growth, and resource consumption.

### B. Valuing environmental resources

1. Marginal analysis and optimal outcomes (Case study\*: surface water in the West)
2. Market valuation and static efficiency (Case study: allocating water to agriculture and cities)
3. Methods of valuation (Case study: wetlands)

### C. Property rights and market failures

1. Common-property and open access resources (Case study: oyster harvests)
2. Externalities (Case study: energy and global warming)
3. Public goods

### D. Defining Sustainable Development

1. Biophysical laws, ecosystem fundamentals, and ecological limits.
2. Dynamic Efficiency (Case study: allocating non-renewable energy resources over time)
3. Reconciling efficiency and intergenerational equity

### E. Applying normative economics to the analysis and solution of natural resource problems.

1. Energy.
2. Ground and surface water.
3. Forests.
4. Fisheries.
5. Recyclable resources.

### F. Conclusion: The prospects for sustainable growth

1. The range of probable scenarios.
2. Elimination of perverse incentives.
3. The role of market allocations.
  - a. Full-cost pricing
  - b. Property rights
  - c. Cost-effectiveness
4. Information and democratic participation
5. Trade and international cooperation
6. Population stabilization

\* Case studies are illustrative only. The instructor has the discretion to select appropriate case studies.

### **Course Requirements (VII)**

Evaluations of student progress will be evenly spaced over the course of a semester, culminating in at least four independent measures of student performance (other than attendance and class participation). Specific assignments and procedures for evaluating student performance will be determined by the individual faculty member, but will include the following:

1. At least two proctored tests or exams.
2. One or more writing assignments that total at least 1500 words.
3. At least one collaborative learning assignment.

At least 300 pages of reading will be assigned. Readings associated with a research paper may be counted toward this requirement.

Instructors will give assignments that utilize modern information technologies in at least one of the following forms: on-line databases for research; e-mail and bulletin boards for collaborative learning; computer simulations; Excel spreadsheets and graphing for problem solving; and Web-based materials and resources.

### **Other Course Information**

ECON 192 will satisfy the following general education requirement: *Interdisciplinary and Emerging Issues Category III*.