STATE UNIVERSITY OF NEW YORK
COLLEGE OF TECHNOLOGY
CANTON, NEW YORK

MASTER SYLLABUS

ECON 320 – Environmental Economics

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SCHOOL OF BUSINESS AND LIBERAL ARTS
BUSINESS
SPRING 2019

A. **TITLE**: Environmental Economics

B. **COURSE NUMBER:** ECON 320

C. **CREDIT HOURS:** 3

D. **WRITING INTENSIVE COURSE**: No

E. **GER CATEGORY:** None

F. **SEMESTER(S) OFFERED:** Spring

G. **COURSE DESCRIPTION:**

Issues and policies involving renewable and nonrenewable energy, natural resource management, pollution control, global climate change, and sustainable development are explored through traditional neoclassical economics as well as through the contemporary approach of ecological economics.

H. **PRE-REQUISITES/CO-REQUISITES:**

a. Principles of Macroeconomics (ECON 101) or Principles of Microeconomics (ECON 103), GER Math and a minimum of 45 college credits with a GPA of 2.0 or better
b. Co-requisite(s):
c. Pre- or co-requisite(s):

STUDENT LEARNING OUTCOMES: ***Course Student Learning Outcome [SLO]***	***PSLO***	***GER***	***ISLO***
1. Revise national income accounts to include environmental issues			Critical Thinking *Critical Analysis [CA]*
2. Compare and contrast neoclassical economics and ecological economics approach to environmental issues			Critical Thinking *Critical Analysis [CA]*
3. Estimate and analyze the supply of nonrenewable resources in multi period setting			Critical Thinking *Problem Solving [PS]*
4. Determine sustainable profit maximizing management policies for renewable resources			Critical Thinking *Problem Solving [PS]*
5. Recommend appropriate pollution control policies			Industry, Professional, Discipline Specific Knowledge and Skills
6. Explain the causes and consequences of climate change			Communication Skills Written [W]

KEY	Institutional Student Learning Outcomes [ISLO 1 – 5]
ISLO #	ISLO & Subsets
1	**Communication Skills** Oral [O], Written [W]
2	**Critical Thinking** *Critical Analysis [CA] , Inquiry & Analysis [IA] , Problem Solving [PS]*
3	**Foundational Skills** *Information Management [IM], Quantitative Lit,/Reasoning [QTR]*
4	**Social Responsibility** *Ethical Reasoning [ER], Global Learning [GL], Intercultural Knowledge [IK], Teamwork [T]*
5	**Industry, Professional, Discipline Specific Knowledge and Skills**

J. APPLIED LEARNING COMPONENT: **Yes_____ No___X____**

K. TEXTS:

Jonathan M. Harris and Brian Roach, Environmental and Natural Resource Economics: A Contemporary Approach, 3rd edition, M. E. Sharpe 2013.

L. REFERENCES:

Alberini, A., and K. Segerson. 2002. Assessing Voluntary Programs to Improve Environmental Quality. *Environmental and Resource Economics* 22: 157-187

Ayres, R. U., and A. V. Kneese. 1969. Production, Consumption, and Externalities. *American Economic Review* 59 (3): 282-297 Pages 282 - 288

Diamond, P. A., and J. A. Hausman. 1994. Contingent Valuation: Is Some Number Better than No Number? *Journal of Economic Perspectives* 8 (4): 45-64

Gordon, H. S. 1954. The Economic Theory of a Common-Property Resource. *The Journal of Political Economy* 62 (2): 124-42 Sections I-III

Hackett, S. C. 2001. *Environmental and Natural Resource Economics: Theory, Policy, and the Sustainable Society*. M. E. Sharpe, Armonk, NY

Hanemann, M. 1994. Valuing the Environment through Contingent Valuation. *Journal of Economic Perspectives* 8 (4)

Hotelling, H. 1931. The economics of exhaustible resources. Journal of Political Economy 31: 137-75

Khanna, M. 2001. Non-mandatory Approaches to Environmental Protection. *Journal of Economic Surveys* 15 (3): 291-324

Lyon, T. P., and J. Maxwell. 2002. Voluntary Approaches to Environmental Protection: A Survey in M. Frazini and A. Nicita, eds. *Economic Institutions and Environmental Policy*. Ashgate Publishing, Aldershot and Hampshire National Center for Environmental Economics. 2001.

OECD Organization for Economic Co-operation and Development. 2003. Voluntary Approaches for Environmental Policy Effectiveness, Efficiency and Usage in Policy Mixes. Washington: OECD Publication
Palmer, K., W. E. Oates, and P. R. Portney. 1995. Tightening Environmental Standards: The Benefit-Cost or the No-Cost Paradigm? *Journal of Economic Perspectives* 9 (4): 119-32

Perman, R., Y. Ma, J. McGilvray, and M. Common. 2003. *Natural Resource and Environmental Economics*. Pearson Addison Wesley, New York

Porter, M. E., and C. van der Linde. 1995. Toward a New Conception of the Environment-Competitiveness Relationship. *Journal of Economic Perspectives* 9 (4): 97-118

Portney, P. R. 1994. The Contingent Valuation Debate: Why Economists Should Care. *Journal of Economic Perspectives* 8 (4): 3-17

Segerson, K., and N. Li. 1999. Voluntary Approaches to Environmental Protection. Pages 273-306 in T. Tietenberg and H. Folmer, eds. *The International Yearbook of Environmental and Resource Economics*. Edward Elgar, Cheltenham, UK

Solow, R. 1994. An Almost Practical Step Toward Sustainability in E. a. R. Commission on Geosciences, ed. *Assigning Economic Value to Natural Resources*. National Academy Press.

Swallow, S. K. 1996. Economic Issues in Ecosystem Management: An Introduction and Overview. *Agricultural and Resource Economics Review* 25 (2): 83-100.

Tietenberg, T. 1998. Disclosure Strategies for Pollution Control. *Environmental & Resource Economics* 11 (3-4): 587-602 "The modern trend toward the use of information strategies to control pollution"

M. EQUIPMENT: A technology enhanced classroom may be required by some instructors. A subscription to the Journal of Environmental Economics and Management would be desirable.

N. GRADING METHOD: A – F

O. SUGGESTED MEASUREMENT CRITERIA/METHODS:

As per core competency sheet

P. DETAILED COURSE OUTLINE:

I. Introduction to Environmental Economics
- A. Major Environmental Issues
- B. Traditional Economics Approach to Environmental Issues
- C. Ecological Approach to Environmental Issues
- D. Synthesis of Ecological and Traditional Economics Approaches
- E. Brief History of Economic Development
- F. Population Growth
- G. Sustainable Development

II. Economic Analysis of Environmental Issues
- A. Cost Benefit Analysis with Externalities
- B. Welfare Analysis with Externalities
- C. Property Rights
  1. Pigovian Tax (Polluter Pays Principle)

2. Course Theorem

D. Nonrenewable Resource Allocation Over Time
   1. Present Value
   2. Future Value
   3. Hotelling's Rule

E. Common Property Resources and Over Use
   1. Public Good

F. Cost Benefit Analysis of Environmental Outcomes
   1. Techniques of Valuation
      a. Contingent Valuation
      b. Demand-Side Methods
      c. Supply-Side Methods
      d. Social Discount Rate
      e. Expected Value (Dealing With Risks and Uncertainty)

III. Ecological Economics and Environmental Accounting

A. Natural Resources as Natural Capital
   1. Optimal Macroeconomics Scale

B. National Income and Environmental Accounting (Greening of National Income Accounts)
   1. Estimating Sustainable Economic Welfare
   2. Measures of True Income
   3. Weak and Strong Sustainability

C. Greening of National Income Accounts and Policy Implications

D. Energy and Resource Flow Analysis
   1. Nicholas Georgescu-Roegen and the Law of Entropy
   2. Input-Output Analysis
      a. National
      b. Global
   3. Ecological Economic Modeling
      a. Individual Process
      b. Complete System

IV. Energy and Resources Markets and Future Projections

A. Supply of Nonrenewable Resources
   1. Physical Supply
   2. Economic Supply
      a. Economic Reserves
      b. Subeconomic Resources
      c. Static Reserve Index and Expected Resource Lifetime
      d. Exponential Reserve Index and Expected Resource Lifetime

B. Economic Theory of Nonrenewable Resource Use
   1. Maximizing Resource Rents
      a. Competitive Market
      b. Marginal Extraction Cost
   2. Long Term Trends In Nonrenewable Resource Usage

C. Reserve Estimates of Nonrenewable Resources
   1. Reserve Base
   2. Reserve Base Index

D. Internalizing Environmental Cost of Resource Recovery
   1. Choke Price
   2. Backstop Resource
   3. Recycling

F. Economic and Ecological Analysis of Energy

G. Energy Trends and Projections
   1. Patterns of Use
   2. Future of World Oil Production

H. Energy Markets
   1. Commodity Futures and Energy Prices

2. Privatization of Energy Markets
3. Globalization of Energy Markets
4. Competitive vs. Regulated Markets
5. Ethics in Energy Markets
6. Economics of Alternative Energy Futures

J. Future Energy Development
1. Implicit Discount Rates and Energy Efficiency

V. Renewable Resources
A. Ecosystem Management
1. Economics of Forest Management
a. Forest Loss and Biodiversity
b. Institutional Failures in Forest Management
c. Policies for Sustainable Forest Management
2. Water Depletion and Renewal
a. Demand Projections
b. Increasing Supply
c. Policies for Sustainable Water Management

VI. Pollution: Economic Analysis and Policy
A. Economics of Pollution Control
1. Optimal Level of Pollution
2. Marginal Costs and Benefits of Pollution Control
a. Selecting Among Pollution Control Policies
B. Pollution Control Policies
1. Standards
2. Taxes
3. Permits
4. Transferable Pollution Permits

VII. Global Climate Change
A. Causes and Consequences of Climate Change
1. Greenhouse Effect
a. Trends and Projections for Temperature Changes
B. Economic Analysis of Climate Change
1. Cost-Benefit Studies of Global Climate Change
C. Analyzing Long-Term Environmental Climate Changes
D. Policy Responses to Environmental Change

VIII. Environment, Trade and Development
A. World Trade and the Environment
1. Environmental Impact of Trade
2. Trade Agreements and the Environment
3. Strategies for Sustainable Trade
B. Institutions for Sustainable Development
1. Economics of Sustainable Development
2. Reforming Global Institutions
3. Policies for Sustainable Development

Q. <u>LABORATORY OUTLINE</u>: N/A