

Queen's University
ENSC 290
Introduction to Ecological Economics
Fall Term, 2004
Monday 1:00pm – 2:30pm, Wednesday 11:30am – 1:00pm
Dunning Hall Room 27

Course Outline and Reading List

Contact Information:

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Office Hours - Monday 2:30 pm - 4:00 pm
- Wednesday 1:00 pm - 2:30 pm
- By Appointment

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Outline:

The production of goods and services in any economy generates both benefits and costs. Standard neo-classical economic models do an excellent job describing the “optimal” trade-off between these benefits and costs, conditional on our ability to measure values accurately, completely and quantitatively. Unfortunately, raw material inputs and waste by-products (key components in virtually every production process) are drawn from, or released into our natural environment and, almost without exception, environmental assets cannot be accurately, completely and quantitatively valued with the typical tools employed by neo-classical economics. Recently, the field of ecological economics has evolved for the purpose of identifying failures within standard neo-classical economic models with respect to the valuation and consideration of environmental assets.

Although we will be discussing specific case studies and examples, this is not a policy course. Rather than adopting a qualitative or normative approach, we will be focusing on quantitative, theoretical and analytical tools used to investigate the interactions among various determinants of social welfare.

There are no pre-requisites for this course, but students who are uncomfortable with the use of basic calculus and statistics should expect to do some supplementary reading and preparation.

This course has been designed specifically for students from the School of Environmental Studies with no economics background.

Structure and Topics:

Week 1 – Introduction: Defining ecological economics.

Week 2 – The standard neo-classical economic model: Marginal benefits, marginal costs and market interactions.

Week 3-4 – Introducing environmental assets into the standard model: Externalities, public goods and market failures.

Week 5-6 – The neo-classical response: Command and control, and market based policies.

Week 7-8 – Ecological economists' critique # 1: Measuring non-use and non-market values.

Week 9 – Ecological economists' critique # 2: Trading off growth and environmental quality (the environmental Kuznet's curve).

Week 10 – Ecological economists' critique # 3: Substituting natural and physical capital to sustain growth.

Week 11 – Ecological economists' critique # 4: Measuring sustainable growth with green national income accounts.

Week 12 – Ecological economists' critique # 5: Optimal extinction.

Requirements:

The first midterm exam will be written in class (75 minutes) on Wednesday, October 6 (no exceptions without documented medical excuse).

The second midterm exam will be written in class (75 minutes) on Wednesday, November 3 (no exceptions without documented medical excuse).

A final exam (3 hours) will be written during the December exam period (no exceptions other than those approved by the Faculty of Arts and Science).

Each student's best midterm will be worth 30% of their final grade.

Each student's worst midterm will be worth 15% of their final grade.

The final exam will be worth 55% of the final grade.

Textbook:

There is no textbook for this course.

The courseware package containing all required readings is available on reserve in the AMS Publishing and Copy Centre (P and CC).

All recommended readings, and any readings added during the course, will be made available on 3 hour reserve at Stauffer Library.

Course Home Page:

Announcements, handouts, overheads and additional course materials will be made available on the course home page. Students should check this page regularly during term.

<http://qed.econ.queensu.ca/faculty/keayi/ensc290.html>

Reading List: (R) indicates a reading that is recommended, but not required.

(1) Introduction to ecological economics:

Edwards-Jones, Davies and Hussain, "A Brief History of Ecological Economic Thought", Ecological Economics: An Introduction, 2000, Blackwell Science, Pg. 10-29.

Costanza, "What is Ecological Economics?", Ecological Economics, 1989, Vol. 1, Pg. 1-7.

Costanza and Daly, "Toward An Ecological Economics", Ecological Modeling, 1987, Vol. 38, Pg. 1-7.

(R) Costanza, Daly and Bartholomew, "Goals, Agenda and Policy Recommendations for Ecological Economics", Ecological Economics: The Science and Management of Sustainability, 1991, Columbia University Press, Pg. 1-20.

(2) The standard neo-classical economic model:

Field and Olewiler, "Benefits and Costs: Demand and Supply", Environmental Economics, 2nd Edition, 2002, McGraw-Hill-Ryerson, Pg. 48-64.

Field and Olewiler, "Economic Efficiency and Markets", Environmental Economics, 2nd Edition, 2002, McGraw-Hill-Ryerson, Pg. 66-83.

- (3) Introducing market failures into the standard neo-classical model:

Callan and Thomas, "Modeling Market Failure", Environmental Economics and Management: Theory, Policy and Applications, 2000, Dryden Press, Pg. 63-94.

- (4) The neo-classical response to environmental degradation:

Callan and Thomas, "Conventional Solutions to Environmental Problems: The Command and Control Approach", Environmental Economics and Management: Theory, Policy and Applications, 2000, Dryden Press, Pg. 99-120.

Callan and Thomas, "Economic Solutions to Environmental Problems: The Market Approach", Environmental Economics and Management: Theory, Policy and Applications, 2000, Dryden Press, Pg. 123-152.

- (5) Ecological economists' critique #1:

Field and Olewiler, "Benefit and Cost Analysis: Benefits", Environmental Economics, 2nd Edition, 2002, McGraw-Hill-Ryerson, Pg. 127-154.

Kahn, "Valuing the Environment", The Economic Approach to Environmental and Natural Resources, 2005, Thomson-Southwestern, Pg. 92-128.

Cummings and Harrison, "The Measurement and Decomposition of Nonuse Values: A Critical Review", Environmental and Resource Economics, 1995, Vol. 5, Pg. 25-247.

- (6) Ecological economists' critique # 2:

Grossman and Krueger, "Economic Growth and the Environment", Quarterly Journal of Economics, 1995, Vol. 110, Pg. 353-377.

Arrow et al., "Economic Growth, Carrying Capacity and the Environment", Science, 1995, Vol. 268, Pg. 520-521.

Rothman and de Bruyn, "Probing into the Environmental Kuznet's Curve", Ecological Economics, 1998, Vol. 25, Pg. 143-145.

(R) Shafik, "Economic Development and Environmental Quality: An Econometric Analysis", Oxford Economic Papers, 1994, Vol. 46, Pg. 757-773.

(R) de Bruyn, van der Bergh and Opschoor, "Economic Growth and Emissions: Reconsidering the Empirical Basis of Environmental Kuznet's Curves", Ecological Economics, 1998, Vol. 25, Pg. 161-175.

(7) Ecological economists' critique # 3:

Tietenberg, "Sustainable Development: Defining the Concept", Environmental and Natural Resource Economics, 6th Edition, 2003, Addison-Wesley, Pg. 88-101.

Pearce, "Defining Sustainable Development", Blueprint # 3: Measuring Sustainable Development, 1993, Earthscan, Pg. 3-10.

(R) Hartwick, "Intergenerational Equity and the Investing of Rents from Exhaustible Resources", American Economic Review, 1977, Vol. 67, Pg. 972-974.

(R) Serafy, "The Environmental as Capital", Ecological Economics: The Science and Management of Sustainability, 1991, Columbia University Press, Pg. 168-175.

(8) Ecological economists' critique # 4:

Lesser, Dodds and Zerbe, "Measuring Sustainable Development", Environmental Economics and Policy, 1997, Addison-Wesley, Pg. 597-606.

Peskin, "Alternative Environmental and Resource Accounting Approaches", Ecological Economics: The Science and Management of Sustainability, 1991, Columbia University Press, Pg. 176-193.

(R) Pearce et al., "Resource and Environmental Accounting", Measuring Sustainable Development: Macroeconomics and the Environment, 1997, Elgar Press, Pg. 33-68.

(9) Ecological economists' critique # 5:

Gordon, "The Economic Theory of a Common Property Resource: The Fishery", Journal of Political Economy, 1954, Vol. 62, Pg. 124-142.

Smith, "On Models of Commercial Fishing", Journal of Political Economy, 1969, Vol. 77, Pg. 181-198.

Clark, "The Economics of Overexploitation", Science, 1973, Vol. 181, Pg. 630-634.