

Graduate Course Outline
Department of Economics
School of Business and Economics

ECON 6060-3
Applications of Economic Economics and Natural Resource
Economics (3,0,0)

1. COURSE OVERVIEW

Calendar Description

Students apply the principles of sustainable economic management to environmental and resource issues. Topics include population and the environment; agriculture and food; scarcity and abundance of resources; energy sector; renewable resource using in the fisheries and the forestry sector; water economics; pollution, impacts and policy responses; industrial ecology; trade and development and the environment; and institutions for sustainable development.

Educational Objectives/Graduate-Level Learning Outcomes

After successfully completing the course, students will be able to:

1. Discuss the possible limits to economic growth.
2. Evaluate the economics of the interaction of population dynamics with the environment.
3. Appraise the economics of renewable resources.
4. Assess the economics of non-renewable resources.
5. Apply the principles of economic sustainability to agriculture systems
6. Use the concepts of economic sustainability towards energy efficiency.
7. Evaluate the principles of economic sustainability to the fisheries.
8. Appraise the principles of economic sustainability to the forestry sector.
9. Assess the economics of water resource.
10. Describe the impact of pollution and pollution control.
11. Discuss the economics of industrial ecology.
12. Review the institutions for sustainable development.

Course Topics

1. Resources, Environment, and Economic Development
 - A brief history of economic growth and the environment
 - Limits to growth model
 - A summary of recent growth
 - Future of economic growth and the environment
 - Introduction to sustainable development
2. Population and the Environment
 - Dynamics of population growth
 - Theory of demographic transition

- Population growth and economic growth
 - Ecological perspectives on population growth
 - Future population policies
3. Agriculture, Food, and the Environment
- Population and food supply
 - Trends in global food production
 - Agriculture impact on the environment
 - Sustainable agriculture
4. Scarcity and Abundance of Resources
- Supply of nonrenewable resources
 - Economic theory of nonrenewable resource use
 - Global scarcity or increasing abundance
 - Economics of recycling
5. Energy Sector
- Energy and economic systems
 - Economic and ecological analysis of energy
 - Energy trends and projections
 - Economics of alternative energy futures
 - Policies for future energy development
6. Renewable Resource Use in Fisheries
- Principles of renewable resource management
 - Ecological and economic analyses of fisheries
 - Economics of fisheries in practice
 - Policies for sustainable fisheries management
7. Renewable Resource Use in the Forestry Sector
- Economics of forest management
 - Forest loss and biodiversity
 - Policies for sustainable forest management
8. Water Economics
- Global supply and demand for water
 - Addressing water shortages
 - Water pricing
 - Water markets and privatization
9. Pollution, Impacts and Policy Responses
- Economics of pollution control
 - Pollution control policies: standards, taxes, permits
 - Pollution control policies in practice
 - Cumulative and global pollutants
10. Industrial Ecology
- Economic and ecological views of production
 - Potential of industrial ecology
 - Industrial ecology on a global scale
 - Policies to promote industrial ecology

11. Environment, Trade, and Development

- Environmental impact of trade
- Trade and environment: policies and practice
- Trade agreements and the environment
- Strategies for sustainable development

12. Institutions for Sustainable Development

- Economics of sustainable development
- Reforming global institutions
- Policies for sustainable development

Texts/Materials

Textbooks

Jonathan M. Harris, *Environmental And Natural Resource Economics, A Contemporary Approach*, Houghton Mifflin Company, 2006.

Other Resources

Tom Tietenberg and Lynne Lewis, *Environmental And Natural Resource Economics*, Pearson, Eight Edition, 2009.

Barry Field, *Natural Resource Economics, An Introduction*. Waveland Press, 2001.

Frank A. Ward, *Environmental And Natural Resource Economics*, Pearson Education Ltd., 2006.

Suggested Readings

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

Clark, C., "Quantitative Methods in Fishery Management: The Schaefer Catch Equation" *RMA Newsletter* Spring 2009.

Costello, Christopher, S. Gaines, and J. Lynham (2008) "Can Catch Shares Prevent Fisheries Collapse," *Science*, 321: pp. 1678-16.

Darmstadter J. (2011) "Meeting the World's Natural Resource Needs: Confrontation (or Worse) Ahead?" *Resources for the Future, Issue Brief 11-07*, June 2011.

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, pp. 161-175.

Dupont, D. (1996) "Limited Entry Fishing Programs: Theory and Canadian Practice" in D. Gordon ed., *Fisheries and Uncertainty: A Precautionary Approach to Resource Management* University of Calgary Press, pp. 107-126.

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

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

Hanson, D. A., "Increasing Extraction Costs and Resource Prices: Some Further Evidence" Bell Journal of Economics 11 (1980), pp. 335-342.

Livernois, J., "On the Empirical Significance of the Hotelling Rule" Review of Environmental Economics and Policy 3 (2009), pp. 22-41.

Lutz Killian (2010) "A Primer on Oil Price Shocks Past and Present," Resources for the Future, Weekly Policy Commentary, May 21, 2010.

Postel, S. (1996) "Forging a Sustainable Water Strategy" in L. Brown ed. The State of the World, Worldwatch Institute, pp. 40-59.

Renzetti, S. (1999) "Municipal Water Supply and Sewage Treatment: Costs, Prices and Distortions" Canadian Journal of Economics 32(2): pp. 688-704.

Reynolds, D. "The Mineral Economy: How Prices and Costs Can Falsely Signal Decreasing Scarcity," Ecological Economics 31 (1999), pp. 155-166.

Savin, J. (2003) Charting a New Energy Future" in L. Starke, ed. The State of the World 2003 Worldwatch Institute, pp. 875-109.

Simpson, Toman and Ayres (2004) "Scarcity and Growth in the New Millenium: Summary," Discussion Paper 04-01, Resources for the Future, January 2004.

Shafik, "Economic Development and Environmental Quality: An Econometric Analysis", Oxford Economic Papers, 1994, vol. 46, pp. 757-773.

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

Smith, J. "World Oil: Market or Mayhem?" Journal Of Economic Perspectives, 23 (3): pp. 145-164.

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

Tsur, Y. and A. Zemel, "Scarcity, Growth and R&D" Journal of Environmental Economics and Management 49 (2005), pp. 484-499.

Student Evaluation Philosophy and Methods

Face-to-Face

Poster Presentation	20%
On-line Discussions	10
Topic Presentation	20
Mid-term exam	20
Final Exam	30

Online

Assignments	40%
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On-line Discussions	15
Final Exam	45

Poster Presentation

Students will prepare and present a poster to the community on an application of economic sustainability in a team. A grade of zero will be given for all late assignments unless permission is received in advanced.

On-line Discussion

Six discussion questions will be posted for comment by students at different times throughout the course.

Discussion 1 – Are there limits to growth?

Discussion 2 – What is economic impact of population growth on the environment?

Discussion 3 – What can be done to make agriculture more economically sustainable?

Discussion 4 – What is the literature on peak oil and what is next?

Discussion 5 – What is the total economic value of forests?

Discussion 6 – Pollution control. How much and at what cost?

Students are expected to engage in an active debate with each other of the issues involved. The discussion will be monitored to ensure it remains focused on the question asked and that all students are respectful of each other and engaged. Each on-line discussion will be graded after each discussion based on the quality and not the quantity of each student's contributions.

Topic Presentation

Students will present a topic of the course in a team.

Assignments

Assignments will be problem solving type and case study analysis to prepare students for the exams. A grade of zero will be given for all late assignments unless permission is received in advanced.

Mid-term Exam

There will be a mid-term exam after Topic 5. Translators or other electronic devices are not permitted during exams with the exception of a scientific calculator.

Final Exam

The comprehensive final exam is three hours in length. Translators or other electronic devices are not permitted during exams with the exception of a scientific calculator.

2. RELATIONSHIP TO OTHER COURSES

Prerequisites

ESMN 6010, ESMN 6020

Co-requisites

None

Links to Previous, Concurrent and Subsequent courses

Building on ESMN 6010-Principles of Sustainable Economic Management, this course applies the principles of sustainable economic management to various real world environmental and natural resource issues and is the foundation for more in depth applications in subsequent courses.
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3. COURSE PURPOSE AND FIT IN GRADUATE PROGRAM

What is this course's role in the graduate program?

This course applies the principles of sustainable economic management to various real world environmental and natural resource issues and is the foundation for more in depth applications in subsequent courses.

4. DELIVERY

Delivery mode (face-to-face, blended, distance)

The course will be developed for distance, blended, and campus delivery.

Delivery Features

- Lectures recorded using Camtasia
- Group work
- Online discussions

Instructional Approach

This course employs an active, collaborative learning approach with a heavy reliance on group problem solving, academic research and online discussion or class participation.

5. OTHER

Methods for Prior Learning Assessment and Recognition

PLAR is not allowed in graduate programs under Northwest Commission on Colleges and Universities (NWCCU) accreditation standards. No PLAR credit will be awarded, which is permissible under TRU policy.

Course Policies

Academic Integrity – In accordance with TRU Policy 5-0.

Examinations – In accordance with TRU Policy ED 3-9. In addition, students must pass the final exam to receive a passing grade for the course.

Grading – In accordance with TRU Policy ED 3-5.

Late Assignments - A grade of zero will be given for all late assignments unless permission is received in advanced from the instructor/facilitator.

Student Academic Appeals - In accordance with TRU Policy ED 4-0.

Student Attendance – In accordance with ED 3-1.

Team Conflict - All team members should actively participate in the analysis of the case and the preparation of the report and act professionally towards each other. During the course, if a student feels this is not occurring, they should bring this matter to the attention of the facilitator immediately so they can investigate the conflict and take the appropriate action including assigning students a failing grade for the course. Working effectively in teams and acting professionally towards one's colleagues is a major learning goal of an MBA program. Students should be careful to ensure their behaviour does not become an issue.