

Graduate Course Outline

**Department of Economics
School of Business and Economics**

**ECON 6020-3
Applied Microeconomics for Sustainable Management (3,0,0)**

1. COURSE OVERVIEW

Calendar Description

Students examine more advanced microeconomic tools and apply these to economic sustainable management. Topics include market analysis for economic sustainability, demand analysis and estimation, the role of elasticities in sustainable management; consumer behavior and rationale choice; risk behavior and assessment; production efficiency; cost analysis and estimation; the role of the market structure for sustainable management; game theory and strategic behavior; and asymmetric information problems.

Educational Objectives/Graduate-Level Learning Outcomes

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

1. Discuss the role of applied economics for sustainable management.
2. Apply market analysis to sustainability issues.
3. Predict the effects of changing market condition on price and quantity.
4. Use the concept of elasticity of demand to explain sustainability issues.
5. Illustrate how consumers make decisions under risk and uncertainty.
6. Examine how decisions are taken under risk and uncertainty paying particular attention to climate change negotiations and race to the bottom sustainable practices.
7. Explain alternative ways of measuring the productivity of all inputs used to produce goods and services.
8. Describe the effects of technology and innovation on cost, profit and market share of environmental goods.
9. Interpret results of demand estimation for sustainable goods and services using regression analysis.
10. Illustrate how firms with market power use different pricing strategies to price goods and services for sustainability.
11. Explain how game theory helps stakeholders better understand mutually interdependent management decisions and relate to environmental issues.
12. Explain why asymmetric information can lead to moral hazard and adverse selection, and identify strategies for mitigating these potential problems

Course Topics

1. Introduction to Applied Microeconomics for Sustainable Management
 - Themes of applied microeconomics for sustainable management

- Role of markets for sustainable practices
- Real versus nominal prices
- Contribution of applied microeconomics to sustainability issues
- Application 1: The price of eggs and the price of a college education
- Application 2: The minimum wage rate
- Application 3: Corporate decision making: the Toyota Prius
- Application 4: Public policy design: fuel efficiency for the 21st century

2. Review of Basic Demand and Supply Concepts

- Supply and demand concepts
- Market equilibrium
- Changes in market equilibrium
- Effects of government intervention: price controls
- Application 1: The demand for clean air
- Application 2: Emissions trading and clean air
- Application 3: The long-run behavior of natural resource prices
- Application 4: Price controls and natural gas shortages

3. The Concept of Elasticities

- Elasticities of demand and supply
- Factors affecting the elasticities of demand and supply
- Short-run versus long-run price elasticities
- Understanding and predicting the effect of changing market conditions
- Application 1: Upheaval in the world oil market
- Application 2: The behavior of copper prices
- Application 3: The demand for gasoline and automobiles

4. Consumer Behavior and Rational Choice

- Utility function and the law of diminishing marginal utility
- Indifference curves and the marginal rate of substitution
- Budget constraint
- Consumer equilibrium
- Effect of changing income and changing prices
- Income and substitution effects
- Deriving the uncompensated and compensated demand curve
- Demand estimation
- Consumer surplus
- Network externalities
- Application 1: Designing new automobiles
- Application 2: The effects of gasoline tax with a rebate
- Application 3: The long-run demand for gasoline
- Application 4: The value of clean air

5. Uncertainty and Risk Behavior

- Concepts of risk and uncertainty
- Probability concepts
- Absolute and relative risk measurement

- Utility theory of risk analysis
- Adjusting valuation models for risk
- Behavioral economics
- Application 1: Deterring environmentally bad behavior
- Application 2: The use of risk adjusted discount rates
- Application 3: The economics of environmental risk assessment
- Application 4: The risk of an oil spill

6. Production

- Production function
- Factors that shift the production function
- Productivity measures – total, average and marginal product
- Law of diminishing returns
- Returns to scale
- Iso-quant and Iso-cost curves
- Least-cost production
- Application 1: Malthus and the food crises
- Application 2: Labor productivity and the standard of living
- Application 3: A production function for wheat

7. Cost Analysis and Estimation

- Measuring costs: Which costs matter in decision making?
- Costs in the short run
- Costs in the long run
- Short-run versus long-run costs
- Economies of scale, economies of scope and cost complementarity
- Dynamic changes in costs: the learning curve
- Estimating and predicting costs
- Application 1: The short-run cost of aluminum smelting
- Application 2: The effect of effluent fee on input choices
- Application 3: Reducing the use of energy
- Application 4: Economies of scope in the trucking industry
- Application 5: Cost functions for electric power

8. Competitive Markets

- Perfectly competitive markets
- Profit maximization
- Marginal revenue and marginal cost
- Choosing output in the short run
- The firm's short run supply curve
- The market's short run supply curve
- Choosing production in the long run
- The industry's long run supply curve
- Application 1: The short run output decision of an Aluminum Smelting Plant
- Application 2: The short run production of petroleum products
- Application 3: Constant-Increasing and Decreasing cost industries: Coffee – Oil and Automobiles

9. The Analysis of Competitive Markets

- Evaluating gains and losses from government policies
- The efficiency of competitive markets
- Minimum prices
- Price supports and production quotas
- Import quotas and tariffs
- The impact of a tax or subsidy
- Application 1: Price controls and natural gas shortages
- Application 2: The market for human kidneys
- Application 3: Supporting the price of wheat
- Application 4: The sugar quota
- Application 5: A tax on gasoline

10. Monopoly Markets

- Monopoly
- Monopoly power
- Sources of monopoly power
- The social costs of monopoly power
- Limiting market power: The Antitrust laws
- Application 1: Is Monopoly good for the environment?
- Application 2: B.C. Hydro regulation? How?
- Application 3: Different pricing strategies for natural monopolies
- Application 4: Are monopolies becoming scarce with globalization?

11. Game Theory and Strategic Behavior

- The Theory of Games
- Dominant and Maximin Strategies
- The Prisoner's Dilemma
- Nash Equilibrium
- Repeated games
- Sequential games
- Threats, commitments and credibility
- Entry deterrence
- Application 1: Game theory in climate change negotiations
- Application 2: Competition and race to the bottom

12. Asymmetric Information

- The Lemons model
- Moral hazard and adverse selection
- Using signals to avoid the Lemons problem
- Screening in insurance markets
- Moral hazard and principal agent problems
- Application 1: Moral Hazard and the national health care debate
- Application 2: The good and bad of incentive pay
- Application 3: Getting the board to focus on the long run

Texts/Materials

Textbooks

Robert Pindyck and D. Rubinfeld, *Microeconomics*, 8th Edition, Prentice Hall-Pearson.

Suggested Readings

Agostini, Claudio A. "Estimating market power in the US copper industry." *Review of Industrial Organization* 28.1 (2006): 17-39.

Akerlof, George A. "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism." *Quarterly Journal of Economics*, 1970, 84(3), August, 488–500.

Altman, Daniel, David M. Cutler and Richard J. Zeckhauser, "Adverse selection and adverse retention." *American Economic Review*, 88(2), 1998, 122–126.

Andreyeva, Tatiana, Michael W. Long, and Kelly D. Brownell. "The impact of food prices on consumption: a systematic review of research on the price elasticity of demand for food." *American Journal of Public Health* 100.2 (2010): 216-222.

Athey, Susan and Ilya Segal. "Designing Efficient Mechanisms for Dynamic Bilateral Trading Games." *American Economic Review* 97, (May 2007): 131-136.

Autor, David H. and Mark G. Duggan. "Distinguishing Income from Substitution Effects in Disability Insurance." *American Economic Review* 97, No. 2 (May 2007): 119-124.

Berry, Steven, James Levinsohn, and Ariel Pakes. "Differentiated products demand systems from a combination of micro and macro data: The new car market." No. w6481. National Bureau of Economic Research, 1998.

Bramoulle, Yann and Rachel Kranton. "Risk Sharing Across Communities." *American Economic Review* 97, No. 2 (May 2007) L 70-74.

Chiang, Judy S. Wang, and Ann F. Friedlaender. "Truck technology and efficient market structure." *The Review of Economics and Statistics* (1985): 250-258.

Chay, Kenneth Y., and Michael Greenstone. "Does air quality matter? Evidence from the housing market." No. w6826. National Bureau of Economic Research, 1998.

Coase, Ronald H. "The nature of the firm." *Economica* 4.16 (1937): 386-405.

Cooper, John CB. "Price elasticity of demand for crude oil: estimates for 23 countries." *OPEC review* 27.1 (2003): 1-8.

David, Paul E. "Clio and the Economics of QWERTY," *American Economic Review*, 75(2), 1985, 332–337.

Deacon, Robert T., and Jon Sonstelie. "The welfare costs of rationing by waiting." *Economic Inquiry* 27.2 (1989): 179-196.

Di Tella, Rafael, and Robert MacCulloch. "Some uses of happiness data in economics." *The Journal of Economic Perspectives* 20.1 (2006): 25-46.

Dwyer, G.P. and C.M. Lindsey, "Robert Giffen and the Irish Potato," *American Economic Review*, 74(1), March 1984, 188–192.

Eisensee, Thomas and David Stomberg. "News Droughts, News Floods, and U.S. Disaster Relief." *Quarterly Journal of Economics* 122, No. 2 (May 2007): 693-728

Fisher, Franklin M., Paul H. Cootner, and Martin Neil Baily. "An econometric model of the world copper industry." *The Bell Journal of Economics and Management Science* (1972): 568-609.

Frech, Harry E., and William C. Lee. "The welfare cost of rationing-by-queuing across markets: theory and estimates from the US gasoline crises." *The Quarterly Journal of Economics* 102.1 (1987): 97-108.

Frijters, Paul, John P. Haisken-DeNew, and Michael A. Shields. "Money does matter! Evidence from increasing real income and life satisfaction in East Germany following reunification." *The American Economic Review* 94.3 (2004): 730-740.

Garber, Alan M., and Jonathan Skinner. "Is American health care uniquely inefficient?" No. w14257. National Bureau of Economic Research, 2008.

Gillingham, Kenneth, Richard G. Newell, and Karen Palmer. "Energy efficiency economics and policy." No. w15031. National Bureau of Economic Research, 2009.

Griffin, James M. "The process analysis alternative to statistical cost functions: An application to petroleum refining." *The American Economic Review* 62.1/2 (1972): 46-56.

Hamilton, James D. "Understanding crude oil prices." No. w14492. National Bureau of Economic Research, 2008.

Hansmann, Henry. "The economics and ethics of markets for human organs." *Journal of Health Politics, Policy and Law* 14.1 (1989): 57-85.

Howe, M. 1972-73. "A Study of Trade Association Price Fixing." *Journal of Industrial Economics* 21: 236-256.

Irwin, Douglas A., and Peter J. Klenow. "Learning-by-doing spillovers in the semiconductor industry." *Journal of Political economy* (1994): 1200-1227.

Jensen, Robert and Nolan Miller. "Giffen Behavior: Theory and Evidence." Kennedy School of Government Faculty Research Working Paper Series #RWP02.

Just, Richard E., David Zilberman, and Eithan Hochman. "Estimation of multi-crop production functions." *American Journal of Agricultural Economics* 65.4 (1983): 770-780.

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Katzner, D. W. 2001. "The significance, success, and failure of microeconomic theory." *Journal of Post Keynesian Economics* 24(1): 41-58.

Kennan, John. "The elusive effects of minimum wages." *Journal of Economic Literature* 33.4 (1995): 1950-1965.

Knittel, Christopher R. "Reducing petroleum consumption from transportation." No. w17724. National Bureau of Economic Research, 2012.

Krugman, Paul, "Competitiveness: a dangerous obsession," *Foreign Affairs*, 73 (2), March-April 1994, 28-44.

Maxwell, W. D. 1969. "Production Theory and Cost Curves." *Applied Economics*, 1: 211-224.

Petrin, Amil. "Quantifying the benefits of new products: The case of the minivan." No. w8227. National Bureau of Economic Research, 2001.

Pindyck, Robert S. "Gains to producers from the cartelization of exhaustible resources." *The Review of Economics and Statistics* 60.2 (1978): 238-251.

Pindyck, Robert S. "Higher energy prices and the supply of natural gas." *Energy System Policy, (United States)* 2.2 (1978).

Pindyck, Robert S. "The measurement of monopoly power in dynamic markets." *Journal of Law and Economics* 28.1 (1985): 193-222.

Rothschild, Michael and Joseph E. Stiglitz "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Information" *Quarterly Journal of Economics*, 1976, 90(4), 630-649.

Stavins, Robert N. "What Can We Learn from the Grand Policy Experiment? Lessons from SO2 Allowance Trading," *Journal of Economic Perspectives*, 12(3), Summer, 1998, 69-88.

Sumner, Daniel A., and Michael K. Wohlgenant. "Effects of an increase in the federal excise tax on cigarettes." *American Journal of Agricultural Economics* 67.2 (1985): 235-242.

Thaler, Richard H., Amos Tversky, Daniel Kahneman, and Alan Schwartz, "The Effect of Myopia and Loss aversion on Risk Taking: an Experimental Test." *Quarterly Journal of Economics*, 112(2), May 1997, 647

Tversky, Amos and Daniel Kahneman, "Rational Choice and the Framing of Decisions," in *Rational Choice: The Contrast Between Economics and Psychology*, Robin Hogarth and Mevlin Reder, eds., Chicago: University of Chicago Press, 1987, 67

Sorenson, Timothy L. "Credible Collusion in Multimarket Oligopoly." *Managerial Decision Economics* 28, no. 2 (March 2007): 115-128.

Fort, Rodney. "Reply to 'the Paradox of Inelastic Sports Pricing'." *Managerial and Decision Economics* 28, 2 (March 2007): 159-160.

Spence, Michael "Job Market Signaling." *Quarterly Journal of Economics*, 1973, 87(3), 355–374.

Tyler, John H., Richard J. Murnane, and John B. Willet, "Estimating the Labor Market Signaling Value of the GED" *Quarterly Journal of Economics*, 2000, 115(2), 431–468.

Veblen, T. 1909. *The Limitations of Marginal Utility*. *Journal of Political Economy* 17(9), 620-636.

Viscusi, W. Kip, and Joseph E. Aldy. "The value of a statistical life: a critical review of market estimates throughout the world." *Journal of Risk and Uncertainty* 27.1 (2003): 5-76.

Waldfogel, Joel. "The Deadweight Loss of Christmas" *American Economic Review*, 1993, 83 (5), 1328.

Whitmore, Diane. "What are Food Stamps Worth?" Princeton Industrial Relations Section Working Paper #468, July, 2002.

Student Evaluation Philosophy and Methods

On-Line

Assignments/Case Studies	45%
On-line Discussions	15%
Final Exam	40%

Face-to-Face

Assignments/Case Studies	25%
Quizzes	10%
Class Participation	5%
Midterm	20%
Final Exam	40%

Assignments/Case Studies

Students are required to submit four assignment sets – each containing multiple problems from different modules and one or two case studies. Assignment problems and case studies may be completed in teams. A grade of zero will be given for all late assignments unless permission is received in advanced.

On-line Discussion

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

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

Mid-term Exam

A mid-term exam will be given after Module 5.

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

Admission to the MScESM program

Co-requisites

None

Links to Previous, Concurrent and Subsequent courses

This course provides necessary tools and concepts to study other courses particularly ESMN 6040-Valuation Methods for Benefit-Cost Analysis, ESMN 6050-Sustainable Community Economic Development, ESMN 6060-Applications of Economic Sustainable Development and ESMN 6080-Policy and Regulation for Sustainable Management.

3. COURSE PURPOSE AND FIT IN GRADUATE PROGRAM

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

Managers must have thorough understanding about microeconomics tools and concepts, which they need to use in making effective sustainable management decisions.

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 independent and in-class problem solving, team case analysis, and online discussion.

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

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

Team Conflict Policy - 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.

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

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

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

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