



Department of Economics Course Outline

		Term:	Fall/Winter 2006-2007
Course:	Economics 494 [Applied Energy Economics II]	Section:	01
Time:	W 15:00 ? 17:50	Place:	SA 121 (subject to change)
Instructor:	(1) Sulayman Al-Qudsi (2) Seyed Jazayeri		
Office:	SS 405	Telephone:	220-5866 (1) CERI- 220-2378
Office Hours:	(1) MF 12:00 ? 13:00 & by appt (2) W 12:00 ? 13:00	E-Mail:	(1) sal-qudsi@ceri.ca (2) sjazayeri@ceri.ca

Textbook(s):

Dahl, Carol (2004), *International Energy Markets, Understanding Pricing, Policies and, Profits*, Latest edition, PennWell Publishing. [**Required**]

Important Web Locations

Natural Resources Canada: www.nrcan.gc.ca

National Energy Board: www.neb.gc.ca

Alberta Department of Energy: www.energy.gov.ab.ca

Alberta Energy and Public Utilities Board: www.eub.gov.ab.ca

Book(s) on Reserve:

There will be some personal copies of the articles below available at the Library.

Economics on Nonrenewable Natural Resources

Harold Hotelling, "The Economics of Exhaustible Resources," *Journal of Political Economy* 39 (1931): 137-75.

William Nordhaus: "The Allocation of Energy Resources," *Brookings Papers on Economic Activity*, 1974.

Robert Solow, "The Economics of Resources or the Resources of Economics," *American Economic Review*, May 1974.

Ronald H. Schmidt, "Hotelling's Rule Repealed? An Examination of Exhaustible Resource Pricing," Federal Reserve Bank of San Francisco *Economic Review*, Fall 1988.

Michael C. Lynch, "Forecasting Oil Supply: Theory and Practice," *Quarterly Review of Economics and Finance*, special issue, 2002.

Fundamentals of the Energy Market

U.S. Energy Information Administration website: <http://www.eia.doe.gov/>.

Robert S. Pindyck: *The Structure of World Energy Demand*, MIT Press, 1979.

Economics of Climate Change and Global Warming Policy

John P. Weyant, editor, "The Costs of the Kyoto Protocol: A Multi-Model Evaluation," *The Energy Journal*, Special Issue, 1999.

Stephen P. A. Brown and Hillard G. Huntington, "Terms of Trade and OECD Policies to Mitigate Global Climate Change," *Economic and Financial Policy Review*, Federal Reserve Bank of Dallas, 2(1) 2003.

http://www.dallasfedreview.org/articles/v02_n01_a01.html.

Energy Policy

, Special Issue: An Economic Analysis of Climate Policy, March 2004

Economics of the World Oil Market

Dermot Gately: "Lessons from the 1986 Oil Price Collapse," *Brookings Papers on Economic Activity*, 1986.

Dermot Gately, "Do Oil Markets Work? Is OPEC Dead?": *Annual Review of Energy*, 1989.

Carole Dahl and Mine Yücel, "Testing Alternative Hypothesis of Oil Producer Behavior," *The Energy Journal*, December 1991.

Borenstein, Severin, A. Colin Cameron, and Richard Gilbert, "Do Gasoline Prices Respond Asymmetrically to Crude Oil Prices?" *Quarterly Journal of Economics*, February 1997.

Shihab-Eldin, Adnan et al (2004): "Oil Outlook to 2025" *OPEC Review*, September.

Al-Attar and Alomair: "Evaluation of upstream petroleum agreements and exploration costs" *OPEC Review* December 2006.

PennWell Publishing CO (2005): International Petroleum Encyclopedia.

Bureau of Transport and Regional Economics, Australia (2005) "Is the world running out of oil?"

Reynolds D. (2005) "The economics of oil definitions: the case of Canada's oil sands" OPEC Review.

BP: Statistical review of World Energy June 2005.

A. F. Alhajji and David Huettner, "The Target Revenue Model and the World Oil Market: Empirical Evidence from 1971 to 1994," *The Energy Journal*, 21(2), 2000.

A. F. Alhajji and David Huettner, "OPEC and World Crude Oil Markets from 1973 to 1994: Cartel, Oligopoly or Competitive," *The Energy Journal*, 21 (3), 2000.

Michael C. Lynch, "Forecasting Oil Supply: Theory and Practice," *Quarterly Review of Economics and Finance*, Special Issue, 2002

Morris A. Adelman, "World Oil Production and Prices: 1947-2000," *Quarterly Review of Economics and Finance*, Special Issue, 2002.

Economics and Restructuring of Natural Gas Markets

Energy Modeling Forum, *North American Natural Gas Markets*, Summary Report, EMF Report 9, Volume 1, Stanford University, December 1988.

Stephen P. A. Brown and Mine K. Yücel, "The Pricing of Natural Gas and U.S. Markets," Federal Reserve Bank of Dallas, *Economic Review*, Second Quarter 1993.

Economics and Restructuring of Electricity Markets

Robert K. Kaufmann, "The Effect of Expected Energy Prices on Energy Demand: Implications for Energy Conservation and Carbon Taxes," *Resource and Energy Economics*, May 1994.

Stephen P. A. Brown and Hillard G. Huntington, "The Economic Cost of U.S. Oil Conservation," *Contemporary Economic Policy*, July 1994.

~~The Applied Energy~~ **Energy Economics Course 494**

studies the role of energy and energy resources from the economics perspective. Basic economic principles and methods are used to examine problems in the production, distribution, and use of energy in all its important forms including coal, oil, gas, nuclear, electricity, and the various alternative fuels. Special policy issues such as the environmental problems of energy use, regulation, the depletion of energy resources, and other problems pertaining to the energy industries including the effects of and optimal taxation of depletable resources will be discussed. The course will also review the relationships and volatility levels of energy spot and futures markets and will also introduce the students to energy forecasting, especially demand and prices and issues therein.

The course has been structured into **two sequential components**. The first component will provide an **overview of energy sources and markets**. We will begin by reviewing key economic concepts and will review energy fundamentals such as energy sources, their reserves and market shares and penetration, costs and prices, temporal energy extraction, energy uses, energy taxation and appraisals, energy regulatory policies and key definitions. The class will also study the economics of renewable energy sources and the energy-environment nexus.

In the second component, the class will focus on **energy use and related issues in energy economics**. We will examine

patterns of energy use by sector such as transportation, industrial, commercial and residential sectors. Examined issues in the transportation economics include: what determines the demand for modes of transportation, such as buses, gas-guzzlers, SUV's and other transpiration modes. How does the price elasticity vary over time, trip and transportation mode? How does technical progress affect coal production and use and how does it affect energy intensity and demand in the aviation, transportation and power sectors, what are the various end-uses of oil and natural gas products and do prices of primary energy sources co-move with end-use prices? What are the patterns and impact of energy trade and what is the probable impacts of WTO commitments? We will also discuss issues of inducing energy conservation like: Have demand side management programs been successful? What is the role of prices in demand conservation? What are the policy tools? So, the second component will focus on the energy use in more detail and analyze their policy implications to primary energy sources and markets discussed in the first component.

Weekly Course Coverage

Part 1: Fall 2006

Week	Date	Topic
Week 1	Sept 13	Energy Economics Overview: Overall Issues: Reserves, Production & Consumption, Penetration Rates
Week 2	Sept 20	Oil Production Costs: Producers, Consumers, Historical & Current Prices
Week 3	Sept 27	Factors Affecting Oil Prices: Demand, OPEC, Independent Producers, Capacity, Reserves
Week 4	October 4	Oil Price Forecasts and Applications
Week 5	Oct 11	Oil Depletion Hypothesis, Peak Oil, Spot & Futures Prices, Market Efficiency, Hedging & Speculations
Week 6	Oct 18	Temporal Production Decisions, Supply & Demand Forecasts, Oil Sands Industry Applications
Week 7	Oct 25	Midterm
Week 8	Nov 1	Energy Appraisal & Regulations Methods
Week 9	Nov 8	Economics of Nuclear Power: Costs, Markets & Policies
Week 10	Nov 15	Economics of Natural Gas: Reserves, Costs & Prices.
Week 11	Nov 22	Natural Gas & Petrochemicals Industries: NA Issues
Week 12	Nov 29	Coal Economics: Reserves, Demand, Production & Transportation Costs

Week 13 Dec 8 Renewable Energy Types, Costs, Markets, Programs

**Week 14 Dec 13 Submit individual term papers
Energy Economics & the Environment**

Week 15 Dec 20 Final

Part 11: Winter 2007

Week 16 Jan 10 Energy Uses: Patterns, Evolution & Dynamics

Week 17 Jan 17 Oil use intensity and demand determinants in industrial Sector

Week 18 Jan 24 Oil in Transportation & Aviation Sectors

Week 19 Jan 31 Oil Taxation and welfare implications

Week 20 Feb 7 Coal Use in industrial and electricity sectors

Week 21 Feb 14 Coal Price & Tax Policy and impact on demand use

**Week 22 Feb 21 Natural Gas Use: Industrial, Commercial, Residential etc. Policies
& Regulations**

Week 23 Feb 28 Midterm

Week 24 March 7 Electricity Use and determinants

Week 25 March 14 Electric Vehicles, flex fuel vehicles

**Week 26 March 21 Are Prices of Primary Energy Correlated with and Consumer
Prices? Empirical Evidence**

**Week 27 March 28 Energy Regulations, Energy Standards, Conservation and
Distributional Impact**

Week 28 April 4 Energy Trade Patterns & WTO

**Week 29 April 11 Submit individual term papers
Future of Energy Use**

Week 30 April 18 Final Exam

Grade Determination and Final Examination Details:

Midterm	20%	
Term Paper	40%	
Final Examination	40%	Registrar Scheduled

Tests and final exams are marked on a numerical (percentage) basis, and then converted to letter grades. The course grade is then calculated using the weights indicated above. As a guide to determining standing, these letter grade equivalences will generally apply:

A+	94 ? 100	B	71 ? 79	C-	50 - 53
A	89 ? 93	B-	65 ? 68	D+	46 ? 49
A-	84 ? 88	C+	61 ? 64	D	40 ? 45
B+	80 ? 83	C	54 ? 60	D-	30 ? 39
				F	0 - 29

If, for some reason, the distribution of grades determined using the aforementioned conversion chart appears to be abnormal the instructor reserves the right to change the grade conversion chart if the instructor, *at the instructor's discretion*, feels it is necessary to more fairly represent student achievement.

A passing grade on any particular component of the course is not required for a student to pass the course as a whole.

Non-programmable calculators will be allowed during the writing of tests or final examinations.

There will be a Registrar scheduled final examination, 2 hours and held in a classroom.

Tests and exams will not be multiple choice questions.

Students? Union Vice-President Academic:

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Students? Union Faculty Representative (Social Sciences)

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Society of Undergraduates in Economics (S.U.E.):

www.fp.ucalgary.ca/econ

Notes:

- Students seeking reappraisal of a piece of graded term work (term paper, essay, etc.) should discuss their work with the Instructor *within fifteen days* of the work being returned to the class.
- It is the student's responsibility to request academic accommodations. If you are a student with a documented disability who may require academic accommodation and have not registered with the Disability Resource Centre, please contact their office at 220-8237. Students who have not registered with the Disability Resource Centre are not eligible for formal academic accommodation. You are also required to discuss your needs with your instructor no later than fourteen (14) days after the start of this course.

Safewalk / Campus Security: 220-5333

SAQ/mi
2006-09-08