

# COURSE SYLLABUS

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**YEAR COURSE OFFERED:** 2014

**SEMESTER COURSE OFFERED:** Fall

**DEPARTMENT:** Finance

**COURSE NUMBER:** 4371

**NAME OF COURSE:** Energy Value Chain

**NAME OF INSTRUCTOR:** Donald Bellman

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**The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.**

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## **Learning Objectives**

Understanding how and why the energy value chains have evolved in the past, how and why they are likely to evolve in the future, and where to look for the most profitable investment opportunities

Understanding major issues associated with important elements of the energy value chains, including global energy efficiency, long term cost and availability of petroleum, climate change concerns, role of marginal suppliers and buyers in setting prices, role of the OPEC cartel in oil pricing, dealing with the inherent uncertainty associated with oil and gas exploration and production, dealing with the inherent uncertainty and reliability concerns associated with supply, demand and distribution of electricity, and commercializing major changes in energy technology

Demonstrating preparation and effective presentation of arguments concerning major contemporary energy issues

## **Major Assignments/Exams**

Tests on material covered in each of three sections of the course.

Three individual homework problems and a team presentations on current energy issues.

Briefing paper projecting future changes in the energy value chains and who are likely economic winners due on the final exam date.

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## Required Reading

The textbook for the course is “Energy” by J. M. Dukert, Greenwood Press, 2009.

There are four cases to be discussed in class.

“Shaping the Future of Solar Power: Climate Change, Industrial Policy, Free Trade“

“The Global Oil & Gas Industry”

“First Solar, Inc. in 2010”

“Khosla Ventures: Biofuels Strategy”

They should be obtained from the Harvard Business Publishing website using a link to be provided at the beginning of the course.

The following required readings are mostly short articles, report summaries or presentation slides.

“Your Brain Lies To You”, Wang & Aamoot, The New York Times, 6.27.08

“International Energy Outlook Highlights”, US Energy Information Administration, 2013

Selections from “Climate Change 2013”, IPCC

“Feel Good Vs Do Good On Climate”, Tierney, The New York Times, 9.11.07

“Doha and Dalian”, Friedman, The New York Times, 9.19.07

“Bundle Up, It’s Global Warming”, Cohen, The New York Times, 12.25.10

“Climate summit set for rows”, BBC News, 11.5.11

“Oil Reserves”, Wikipedia

“Calculating Oil Reserves,” Simmons

“Petroleum Origins and Reservoirs,” MPC Petroleum

“An Energy History Lesson,” Simmons

“The Changing Role of National Oil Companies in International Energy Markets”, Baker Institute

“Shale-Gas Reserves Have Potential to Reignite U.S. Economy”, Barrett, Bloomberg, 11.2.11

“Golden Rules for a Golden Age of Gas” (Executive Summary), IEA

“Basic Refinery Process: Description and History, Part II,” OSHA

“How Oil Pipelines Make The Market Work”, Allegro Group

“Commodity Speculation: Good, Bad, Ugly?” Pirrong

“How To Make A Good Presentation”, Sieminski

“Lessons Learned From 2008”, al Hussein, Journal of Petroleum Technology, August 2009

“Regulatory Capture: Managing the Risk”, Adams et al

“Coal”, Wikipedia

“(Smart) Power to the People,” Accenture Outlook

“Smart Grids,” Wikipedia,

“The future of clean technology”, Schwartz

“Trade War In Solar Takes Shape”, Bradsher, The New York Times, 11.9.11

“Deepwater spills and short attention spans”, Campbell, Reuters, 1.14.10

“Future Transport Fuels”, European Expert Group, January 2011

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## Recommended Reading To Learn More

“Is the world supply of oil and gas peaking”, Simmons  
“Peak Oil Theory Is Faulty”, CERA  
“The Breaking Point”, Maass, The New York Times  
“The bottomless beer mug”, The Economist  
“Facing the hard truths about energy”, National Petroleum Council, 2007  
“Prudent development”, National Petroleum Council, 2011  
“Saudi Arabia’s Oil Reserves”, al Husseni  
“Piper Alpha”, Wikipedia (website)  
“It Was Unclear Who Was In Charge ...”, Urbina, The New York Times, 2010  
“The Coal Industry In The 1990s”, US Energy Information Administration  
“Market Speculation and Energy Prices” Berkowita  
“The Role of Speculation in Energy Markets”, Dickard  
“Woodstock revisited”, The Economist  
“The Development and Demise of the Agrifuels Ethanol Plant, 1978-1988: A Case Study in U.S. Energy Policy”, Theriot  
“From crude oil to petrochemicals”, APPE (website)  
“The Perils of Petrocracy”, Rosenberg, The New York Times  
“The Economics Of Gas Development In Saudi Arabia”, Spalding  
“Misguided oil policy: Nigeria and the third oil crisis”, Theriot

Following websites are suggested as sources of further information on current issues. There are links on Blackboard:

US Energy Information Administration  
International Energy Agency  
Organization of Petroleum Exporting Countries  
National Petroleum Council  
Energy Central  
BP Statistical Review of World Energy  
ExxonMobil Energy and Environment  
Shell Scenarios  
FuelFix  
Rigzone

## List of discussion/lecture topics

Value chain analysis  
Concept of economic rent  
Energy density and efficiency  
Global energy supply and demand  
Carbon dioxide and climate change  
Fossil fuel origins  
Hydrocarbon reserves  
Oil and gas access and exploration  
Oil and gas production

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Unconventional oil and gas  
Hydrocarbon characteristics  
Processing oil and natural gas  
Logistics and midstream operations  
Energy financial markets, “hedging” and “speculation”  
Future oil supplies  
Evolution of the oil and gas industry  
Commodity price determination  
Electric power generation  
Utility regulation  
Electric power prices  
Coal  
Renewable energy sources  
Electric power transmission and distribution  
Energy reliability and security  
Alternative transportation fuels  
Commercializing alternative energy technology

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