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.
COURSE SYLLABUS

Required Reading


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
Selections from “Climate Change 2013”, IPCC
“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
“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
“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
“Deepwater spills and short attention spans”, Campbell, Reuters, 1.14.10
“Future Transport Fuels”, European Expert Group, January 2011
COURSE SYLLABUS

Recommended Reading To Learn More

“Is the world supply of oil and gas peaking”, Simmons  
“Peak Oil Theory Is Faulty”, CERA  
“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)  
“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  
“From crude oil to petrochemicals”, APPE (website)  
“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
COURSE SYLLABUS

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