FINA 7372
Upstream Economics

Fall 2013

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NOTE to law students: The Bauer School of Business will allocate 5 seats for law students in this course. This course counts as an EENR course for those in the EENR LLM or certificate program. A strong preference will go to students who have already taken International Petroleum Transactions or who have some industry background. Law Students must be pre-screened by Prof. Jacqueline Weaver at jweaver@uh.edu by submitting a resume and statement of interest in the course (why you want to take the course). If approved, your name will go to Derrick Gabriel in Student Services who will keep a list and allocate the five positions to the first five students on the list. Bauer registration occurs much later in the semester than Law Center registration, so you will not be officially enrolled until the Bauer registration system opens up. Student Services can help you with this.

Using a combination of lectures, case studies and participation in a realistic economic simulation of exploration and production activities, used for training by oil and gas companies, students will gain an understanding of the economics of the upstream oil and gas industry and skills in economic modeling using Excel and Merak Peep.

Instructor

The instructor is D. H. Bellman. Prior to working with the Global Energy Management Institute, Professor Bellman spent thirty-five years at Exxon. He gained experience in a wide variety of functions, including manufacturing operations, marketing, business analysis and strategic planning. As a Business Development Manager he was involved in creating new joint ventures, acquisitions, and investments in petrochemical complexes in East Asia, West Europe, Australia, Latin America, and the Arabian Gulf, as well as in the US. He earned a bachelor's degree in mechanical engineering at Duke University, and a master's degree in business administration at Stanford University.

Required Texts

1. Oil & Gas Production in Nontechnical Language, Martin Raymond and William Leffler (PennWell Publishing, 2006)
2. Journey To Sakhalin (A), (B), (C), case study (Harvard Business School, 2007), Obtain a copy online from the Harvard Business Publishing website
3. Three other cases provided online via Blackboard

Recommended Texts and Reference Books

4. *International Exploration Economics, Risk, and Contract Analysis*, Daniel Johnston (PennWell Publishing, 2003).
5. *Deepwater Exploration and Production – a Nontechnical Guide, 2nd ed.,* W L Leffler, et al, (PennWell Publishing, 2011).
6. *Project Economics and Decision Analysis, Volumes 1 and 2, 2nd ed., ,* M. A. Mian, (PennWell Publishing, 2011)

Course Outline

Objectives

- Understanding of the physical systems affecting the exploitation of hydrocarbon accumulations
- Understanding the economic structure and issues associated with key upstream processes.
- Ability to construct and use financial models and performance measures for the upstream business
- Appreciation of the key management decisions and the considerations that go into them in the highly uncertain exploration and production businesses

Requirements

1. Participation on a student team in a competitive simulated oil and gas exploration and production venture, concluding with an assessment of the team's results and lessons learned
2. Preparation and use of a financial model using Excel
3. Two team presentations relating to case studies used in the course
4. Two brief recommendation papers relating to case studies used in the course
5. A final examination problem

Class Schedule and Topics

Session 1 8/26/13

- Course introduction and administration
- Overview of the exploration and production process

Preparation: Read chapters 1 and 2 in "Oil and Gas Production"

Session 2 9/9/13

- Petroleum reserves (Guest lecturer)

Preparation: Read chapters 3, 4 and 5 in "Oil and Gas Production"
Read pages 7 to 22 in "Guidelines for Application of the PRMS

Session 3 9/16/13

- Modeling the upstream business
- PetroChallenge introduction

Preparation: Read chapters 6 through 9 in "Oil and Gas Production"

Session 4 9/23/13 PetroChallenge 1

- Select license blocks, using purchased survey and map data
- Identify and submit bids on the three best blocks in the area, using purchased play maps and seismic surveys

Session 5 9/30/13 PetroChallenge 2

- Negotiate terms and conditions with other teams to establish partnerships
- Decide on well locations and contract rigs and service providers, using 3D seismic data and available rigs and service providers
- Estimate the cost of your wells

Session 6 10/7/13 PetroChallenge 3

- Prepare a production well plan for each reservoir you discover

Session 7 10/14/13 PetroChallenge 4

- Choose the type and capacities of the surface facilities and transportation components you will use
- Plan and execute the construction of your surface and transportation facilities

Session 8 10/21/13 PetroChallenge 5

- Decide what to do as the oil and gas are produced
- Respond to changes in technology, market and business environment
- Review the results and determine the winning team

Session 9 10/28/13

- Teams review the results of their PetroChallenge venture and lessons learned
- Introduction to Journey to Sakhalin Case (Issues involved in dealing with sovereign governments to gain access to petroleum resources, using Royal Dutch/Shell's experience with the Sakhalin 2 venture)

Preparation: Assessment of results presentations

Session 10 11/4/13

- Journey to Sakhalin (A) case discussion
- Dealing with risk and uncertainty in upstream financial modeling
- Introduction to Ambitious Oil Company (A) Case (Issues relating to matching exploration and production investment strategy with organizational objectives and capabilities)

Preparation: Sakhalin (A) recommendation paper

Session 11 11/11/13

- Journey to Sakhalin (B, C) case discussion
- Petroleum Fiscal Systems
- Introduction to Ambitious Oil Company (B) Case (Financial modeling to guide negotiation of production sharing agreement terms)

Preparation: Read and prepare to discuss Sakhalin (B,C)

Session 12 11/18/13

- Ambitious Oil Company (A) case presentations and discussion
- Natural gas and natural gas liquids
- Introduction to Marcellus Ethane case (Issues relating to markets for new natural gas production areas)

Preparation: Team presentation of recommendations for AOC(A)

Session 13 11/25/13

- Marcellus Ethane case discussion
- Including attitudes towards risk and risk tolerance in financial models
- Excel modeling workshop (questions associated with AOC (B) model)

Preparation: Marcellus ethane case paper

Session 14 12/2/13

- Ambitious Oil Company (B) case presentations and discussion
- Course take aways

Preparation: Team presentation of recommendations for AOC(B)