

ENCO 4312: Energy Economics

Syllabus
Fall 2008

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<i>Office hours</i>	Monday and Wednesday, 1:00-2:00 PM; Tuesday and Thursday, 2:00-3:00 PM; and by appointment.
<i>Website</i>	http://giberson.ba.ttu.edu/ENCO4312
<i>Class</i>	MWF 12:00-12:50PM, BA 358

Course description

Focus on oil and gas project economics and capital formation. Emphasis on project cost, revenue forecasting, reserve analysis, and financial risk management.

Course materials

- Bosselman, Eisen, Rossi, Spence & Weaver, *Energy, Economics and the Environment: Cases and Materials*, Foundation Press, 2d Edition (2006).
- Packet for purchase at BA Copy Center. [NOT YET AVAILABLE]
- Printed readings will be supplemented by documents available online.

The Bosselman et al. book provides good background on many topics for this course and other Energy Commerce courses. The book will serve as an excellent addition to your personal professional library. (Translation: Don't resell the book at the end of the class – hang on to it!)

Expected Learning Outcomes

After completing this course, students will be able to:

- Describe current energy market trends and relate current conditions to historical market performance;
- Explain basic oil market and gas market dynamics, focusing on consumer and producer responses to prices;
- Evaluate project economics for an oil or gas resource and produce a report in a standardized format;
- Identify uncertain factors in long-term forecasts (especially as relate to project evaluation) and employ analytical tools to guide decision making under uncertainty;
- List the primary environmental laws and regulation affecting oil and gas development, describe the economic approach to assessing environmental policies; and,
- Discuss the role that oil and gas play in the energy economy, and compare that role to alternative sources of energy used for heat, light, and power.

Methods of Assessing Outcomes

The expected learning outcomes will be assessed by review of written assignments (project reports), class participation, and performance on the Mid-term and Final Exams.

Class participation - The primary focus of most class periods will be classroom discussion of the assigned materials facilitated by the instructor. Students are expected to read assigned materials prior to assigned dates and to contribute class discussions. In addition, Students are expected to assist in maintaining a classroom environment that is conducive to learning.

Short Projects – Each major unit of the course will require the student to demonstrate understanding of the material covered by submission of a brief report.

Mid-Term Exam – Test date *projected* to be October 13 (during regular class time).

Final Exam – Test scheduled for December 10 at 10:30 AM – 1:00 PM.

Grading

- Class participation 15%
- Short Project Reports 50%
- Mid-Term Exam 15%
- Final Exam 20%

Additional class policies

In general, the class will follow standard university policies as described in the Texas Tech University Operating Policies (<http://www.depts.ttu.edu/opmanual/>). In addition, please note:

Academic Honesty: It is the aim of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. Academic dishonesty will not be tolerated and will be treated according to the rules outlined in the Student Handbook.

Absences - A student who will miss class due to a university-approved trip or to observe a religious holy day should make that intention known to the instructor prior to the absence so that accommodations can be made in accordance with university policies.

Disabilities - Any student who, because of a disability, may require some special arrangements in order to meet course requirements should contact the instructor to request necessary accommodations.

Syllabus and Course Outline Changes - The instructor may adjust the syllabus or course outline during the course of the semester. Updated versions of the syllabus and course outline will be maintained on the class website (<http://giberson.ba.ttu.edu/ENCO4312>).

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Course Outline

Fall 2008

Consult the online version of this document for current assignment dates and other changes:

<http://www.webpages.ttu.edu/mgiberso/ENCO4312>.

Topic	Assignment	(Class date)
1 – Oil resources – economic considerations		
a) Reserves and resources	Crossley, “Current Economic Conditions”, pp. 35-40 in Guidelines for the Evaluation of Petroleum Reserves and Resources , SPE (2001); BACKGROUND: SPE Petroleum Resources Management System - Guide for Non-Technical Users , SPE et al.(2007)	(August 27)
b) Oil in the economy	Bosselman, ch. 6A	(August 29)
c) Oil markets and prices	Hamilton, “Understanding Oil Prices” (link to abstract ; link to full article).	(Sept 3)
d) Project evaluation	Bosselman, ch. 6B; First assignment introduced	(Sept 5)
e) Forecasting revenue	[Reading on economic forecasting]	(Sept 8)
f) Some economics of unitization	Bosselman, ch. 6C	(Sept 10)
g) The role of OPEC	Adelman, “The Real Oil Problem”	(Sept 12)
h) Economics of depletable resources	[Reading on Hotelling theory]	(Sept 15)
2 – Gas resources		
a) Introduction to gas resources	Bosselman, ch. 8A; FIRST ASSIGNMENT DUE	(Sept 17)
b) Cost of developing conventional gas resources	[Reading on development of gas resources]	(Sept 19)
c) Developing shale resources	[Reading on shale resources]; Bosselman, Ch. 8B	(Sept 22)
d) Natural gas markets and prices	[Gas market reading]	(Sept 24)
e) LNG; Future gas resources	[LNG reading] Bosselman, Ch. 8F	(Sept 26)
f) Siting LNG	Bosselman, Ch. 9C	(Sept 29)
3 – Risk and uncertainty		
a) Risk and uncertainty	[Risk and uncertainty case study]	

D R A F T

- b) Tools for addressing risk and uncertainty Bailey, "Taking a calculated risk"
 - c) Using decision trees [Decision tree for scenario analysis reading] (Oct 3)
 - d) Using Monte Carlo analysis [Reading: introduction to Monte Carlo analysis] (Oct 6)
 - e) Summing up on risk and uncertainty (Oct 8)
- MID TERM EXAM (Oct 10)
- 3 – Risk (continued)
- f) Real options
 - g) Real options
- 4) Energy and environmental economics
- a) Externalities and regulation
 - b) Economic analysis of environmental policy
 - c) Taxing pollution
 - d) Tradable permits THIRD ASSIGNMENT DUE
 - e) Greenhouse gas tax Fourth assignment introduced
 - f) Greenhouse gas permits
 - g) Regulating greenhouse gases: comparing permits and taxes
- 5) Retail markets for oil and gas
- a) Natural gas consumption
 - b) Demand for gasoline FOURTH ASSIGNMENT DUE
 - c) Alternative fuels
 - d) Gasoline – retail price dynamics
 - e) Price gouging
- 6) The changing energy economy
- FINAL EXAM (Dec 10)