

SYLLABUS

Course: Shale Gas & LNG – Spring 2021 - Professor Susan L. Sakmar

Time: Fri. 1:00pm-4:00pm (1/29, 2/26, 3/26, 4/23)

Sat. 10:00am-1:00pm (1/30, 2/27, 3/27, 4/24)

Professor Sakmar

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COURSE OVERVIEW

This course explores the growing role natural gas is expected to play around the world in the context of a number of competing drivers such as increased energy demand, environmental concerns, and energy security. The first half of the semester will focus on US shale gas, which by most accounts is a “game changer” that could be replicated around the world so long as the right regulatory and environmental frameworks are put in place. The second half of the semester will explore the growing role LNG is expected to play as the “glue” linking global gas markets. The course will explore the opportunities and challenges for various LNG import and export projects around the world with a particular focus on the impact US LNG exports will have on global gas markets. Students will have the opportunity to explore a natural gas topic of their choice through their research paper.

Book Requirements: Susan L. Sakmar, **Energy for the 21st Century: Opportunities and Challenges for Liquefied Natural Gas (LNG) (2013)**. The book is available for direct purchase from the publisher at www.e-elgar.com (hard back ISBN-13: 978-1782544234) or paperback (ISBN-10: 1782544232). The book is also available on Amazon.

Grades: The final grade will be weighted as follows:

50% - Research paper (due at end of semester)

50% - Research assignments, class participation, current events and attendance.

Research Paper: Each student will write a 15-page (max) term paper on a topic related to global gas markets. Students are free to develop a topic of their choice subject to professor approval. Students will submit an outline of their paper and will identify their paper topics to the class mid-semester.

Class discussions: Class participation in the seminar is both necessary and mandatory. Students are expected to complete assigned readings and be prepared for class.

Current events: Each student is required to turn in a “current event” news article relevant to some aspect of global gas markets every week or as assigned. Time permitting, several students will present their current event to the class each week.

Research assignments: Several short (2-4 pages) written research assignments will be assigned throughout the semester.

The 1st Research assignment can be downloaded from the course website. Other research assignments will either be handed out to students at class and/or posted on-line for students to download.

1. SHALE GAS DEVELOPMENT (First half of semester)

Overview of US and Global Shale Gas Development

The development of unconventional or shale gas in the United States has significantly altered the outlook for global energy markets. Since shale rock exists in almost every corner of the world, developments in the US shale gas industry are being closely watched as other countries begin to explore the extent of their own unconventional resources. While the potential for global shale gas development is significant, the industry faces a number of commercial, regulatory and environmental challenges that must be addressed.

Topics that will be covered in the course include:

- History and evolution of the shale gas industry – what is shale gas?
- Identify the key environmental issues related to hydraulic fracturing or “fracking,” including water contamination and management, earthquakes, and various landowner issues such as setbacks and earning the “social license” to operate.
- Analysis of the regulatory frameworks for US shale gas development with comparison of key shale producing states such as Texas and Pennsylvania.
- What is the potential for shale gas development globally and which countries have the most potential? What are the issues and challenges?
- Analysis of emerging regulatory frameworks for global shale gas development.

2. THE ROLE OF LNG IN GLOBAL GAS MARKETS (Second half of semester)

The second half of the semester will explore the growing role liquefied natural gas (LNG) is expected to play as the “glue” linking global gas markets. LNG is natural gas that has been cooled until it reaches a liquid state, which then allows it to be shipped around the world. As a direct result of the US shale gas “revolution,” the US has now emerged as a major exporter of LNG, with wide ranging consequences for global gas markets. What was once a niche market with very few players, LNG is now one of the fastest growing segments of the energy sector.

Topics that will be covered in the course include:

- The LNG value chain, including a discussion of the liquefaction process, LNG shipping, and the regasification process.
- The evolution of LNG markets including the history of LNG and an overview of the three major LNG markets.
- A description and overview of key LNG supply projects around the world.
- The primary markets driving LNG demand around the world.
- Key terms in LNG contracts and recent developments in the trade in LNG.
- Safety and environmental issues related to the construction of LNG terminals.
- The regulatory framework for US LNG projects.
- The prospects for US LNG exports and why the US is seen as the catalyst for dramatic change in global gas markets.

COURSE SCHEDULE AND ASSIGNMENTS

Part 1A Course Overview, Global Gas Markets, and Shale Gas Overview

Session 1

Jan. 29 & 30 Read LNG Book: LNG Book Chapters 1, 2 & 10

These first reading assignments discuss the role of natural gas (shale gas and LNG) in the global energy mix and are important to provide a foundation for class discussions throughout the semester.

Assignment Due Research Assignment 1 due Jan 29 – be prepared to discuss.

Current Events Bring a current article on some aspect of shale gas development and be prepared to discuss and turn in the article.

Part 1B Shale Gas - Regulatory Frameworks and Environmental Issues

Session 2

Feb. 26 & 27 Read LNG Book: Re-read Chapter 10 (shale gas)

Assignment Due Research Assignment 2 due Feb 26 – be prepared to discuss.

Current Events Bring a current article on some aspect of shale gas development and be prepared to discuss and turn in the article.

Part 2 THE ROLE OF LNG IN GLOBAL GAS MARKETS

Session 3

March 15-20 UHLC Spring Break

March 26 & 27 Read: LNG Book Chapter 2 (LNG Value Chain)
Read: LNG Book Chapters 3 & 5 (LNG Demand)
Read: LNG Book Chapter 6 (Contracts & Trading)

Assignment Due Research Assignment 3 due March 26 – be prepared to discuss.

Current Events Bring a current article on some aspect of LNG and be prepared to discuss and turn in the article.

TBD PROPOSED PAPER TOPIC and SHORT OUTLINES DUE - TBD

Session 4

April 23 & 24 Read: LNG Book Chapter 4 & 8 (LNG Supply)

Read: LNG Book Chapter 12
Read: US LNG Export reading TBD

- Assignment Due** Research Assignment 4 due April 23 – be prepared to discuss.
- Current Events** Bring a current article on some aspect of LNG and be prepared to discuss and turn in the article.
- April 30** Last day of classes
- May 1-14** Reading days and finals.

**** There is NO final for this class ****

MAY 6 (or TBD) PAPERS DUE BY 3:00 p.m.
Turn in via email to Melissa Fleet mfleet@uh.edu and Prof. Sakmar susansakmar@globalgaslaw.com

Paper Guidelines (more details will be provided in class)

Length: 15 pages total (Including footnotes but does NOT include title page, abstract, table of contents or Appendix).

Format: 11 or 12 pt font for main text - double-spaced between paragraphs, single-spaced between text. 9 or 10 pt font for footnotes – single-spaced. Page numbers at lower right. **Citations:** Bluebook (or similar style manual)

Footnotes: Footnotes (not endnotes)

The UH Provost's office has asked the administration of all academic units to require faculty to add the following language to their syllabus relating to counseling and psychological services.

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to the demands of a professional program, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling [713-743-5454](tel:713-743-5454) during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus. http://www.uh.edu/caps/outreach/lets_talk.html