

The Wharton School – University of Pennsylvania

Energy Finance

Spring 2019

Professor Erik Gilje

Office: SHDH 2456

Office Hours: Tuesday 3:00pm to 4:00pm, or by appointment

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TA: Aymeric Bellon

1. Course Overview

The objective of this course is to provide students with detailed knowledge of **corporate structures, valuation methods, project finance, risk management** practices, **corporate governance** issues, and **geo-political** and **technological risks** in the **energy industry**. In general, this course seeks to provide students with an overall context for understanding energy issues and risks, and how these might affect financing and investment decisions for both providers of energy and end-users of energy.

2. Course Format

Classes: Classes will be comprised of both lectures and case discussions, with the first part of the term weighted towards lectures and the latter part of the term weighted towards case discussions.

Grading: Grades in the course will be based on:

- Team case memos (20%)
- Team focus cases (10%)
- Team term project/presentation (20%)
- Mid-Term Exam (25%)
- Class participation (25%)

Team Case Memos: Students are expected to complete case memos (max two pages of text and two pages of exhibits) for FIVE cases over the semester. The FIVE cases can be chosen from the SEVEN cases that are discussed in class. If SEVEN case memos are turned in, the best FIVE will be used to compute this portion of the grade.

Each memo will be a written response to a set of questions associated with each case, which I will provide one week prior to the case memo due date. The case memo is due the day of the class discussion on the case. Student teams must stay the same throughout the semester and be comprised of a maximum of four students and a minimum of three students.

Team Focus Cases: This semester we will have one focus case. This case has been developed with alumni in the energy industry, and will entail more work than the case memos. The focus cases are required submissions, and are **not** counted as part of the six case memos.

Team Case Presentations: On dates in which cases are due, there will be one student PowerPoint presentation of the case. You should sign up in groups. A list of available slots will be given on Canvas, and slots are first come, first serve. If your group does a case presentation, you will automatically get 5 points towards your class participation. If a group does a “focus” case presentation, it will automatically get 10 points towards class participation. If a presentation slot remains empty prior to a case being due I will randomly allocate a team to present. Presentations are expected to last no longer than 15 minutes, present a basic overview of the case and the responses to the case memo questions. Focus case presentations are expected to be at least 20 minutes.

Team Term Project: The term project will be a detailed valuation and analysis of a current or hypothetical IPO/M&A energy transaction or long/short stock valuation. The term project will be comprised of a written report and a classroom presentation, more details on the term project will be provided at the time the project is assigned.

Mid-Term Exam: The first half of the course is weighted towards classroom lectures. This material will be tested on a mid-term exam which will take place during class time. You may use a calculator (not a computer) for the exam. Make-up exams will only be offered in case of serious illness or a family emergency.

The exam is closed-book and closed-notes. Calculators are allowed and necessary for the exam, but no cell phones with calculators or laptops are allowed during exams. The exam is intended to be time-sensitive.

The exam times are non-negotiable. If you have a conflict, you must inform me by the end of the second week of the course (i.e. Please check now to ensure the exam times do not conflict with a religious holiday, etc.). If you think you will miss an exam (1) contact me as soon as possible and (2) bring reliable proof of absence (hospital receipt, copy of obituary, etc.). Without clear and hard evidence, you will get no credit and will not be allowed to retake the exam.

Mid-Term – February 26, in class

Class Participation: Classroom participation is an important component of this course and will be based on attendance and lecture/case discussion contributions. One way to have a good class participation grade is to present cases and case memo questions/responses. Students should be prepared to discuss all cases, whether or not a write-up is required. Students should have name plates out at all times.

Prerequisites: The prerequisites for the course are FNCE 203/726-Advanced Corporate Finance or FNCE 207/728-Corporate Valuation. Students who receive permission to enroll without the prerequisites are expected to review the relevant topics as necessary to meet the requirements of the class.

Energy Finance “in the news”: Each class will start with a discussion of a news related topic in energy. I will present a topic, but students are also invited to bring up recent energy items in the news to discuss. Good resources to look at would be *The Wall Street Journal* and *The Economist*.

3. Course Resources

Course Readings: The main resource for this course will be the course pack and readings posted on Canvas. There are also recommended readings from Simkins and Simkins, *Energy Finance and Economics* (S&S).

Course website: The website for this course will be available on Canvas. In addition to the required readings from the course pack, I will post lecture slides and links to articles and other supporting material.

Office hours and TA support offered: In most cases the best ways to address your questions will be 1) come to office hours or make an appointment 2) ask your question on the message board or 3) ask me in class or 4) reach out to the TA.

I will only answer emails for simple administrative issues or minor clarifying questions (short responses), or to make an appointment if you cannot come to office hours.

4. Academic Integrity

Students are expected to follow the rules of academic honesty in this class. This means that examinations are to be the work of the individual student using only the material permitted during the examination. Regarding submitted assignments and projects, the work should be the work of *only the team members* reported on the front of the document. When a project requires you to produce a forecasting or valuation model, the use of a forecasting or valuation model not created exclusively by the student team for this course is a violation of the codes of academic integrity. In other words, **for all submitted assignments, you must start with an Excel spreadsheet which is at most populated with some raw data.**

Please note that if you violate this policy, I will ensure that you are disciplined to the fullest extent provided for by Wharton and University policies on academic integrity.

5. Course Outline

Course outline: An outline of the course material and overview of the material is below. Note: Some of the material for this course may be changed over the semester. It is highly likely to have a number of changes with advance notice given in class and/or Canvas. **Some of the guest lectures will be held outside regular class location and time.**

Class	Topic	Readings/Deliverables Required is in Bold Recommended is in Italics
Jan 17 Class 1	Lecture: Course Introduction and Overview of the “Energy Value Chain”	<i>S&S Ch. 1-3, Ch. 5</i>
Jan 22 Class 2	Lecture: Independent Exploration and Production Companies <i>Investments, Capital Structure, Dividend Policy, Valuation</i>	EOG Reading EOG Investor Presentation (All)

Jan 24 Class 3	Lecture: Master Limited Partnerships Pt 1 <i>Investments, Capital Structure, Dividend Policy, Valuation</i>	MLP 101 posted reading BWP Reading
Jan 29 Class 4	Lecture: Master Limited Partnerships Pt 2 <i>Investments, Capital Structure, Dividend Policy, Valuation</i>	KMP Reading VNOM S-1 Reading
Jan 31 Class 5	Lecture: Refiners, Petrochemical Companies, Utilities, Tesla <i>Investments, Capital Structure, Dividend Policy, Valuation</i> <i>Sutton Bridge</i>	PSX Reading Sutton Bridge Reading Tesla Reading
Feb 5 Class 6	Lecture: Integrated Oil Companies <i>Investments, Capital Structure, Dividend Policy, Valuation</i>	XOM Reading XOM Investor Presentation (All)
Feb 7 Class 7	Case: Kinder Morgan Buyout	Case Memo Due Kinder Morgan Pt 2 Reading
Feb 12 Class 8	Lecture: Energy M&A <i>Overview</i>	<i>S&S Exxon-XTO acquisition</i> Athlon-Encana Readings
Feb 14 Class 9	Case: MW Petroleum <i>Energy M&A</i>	Case Memo Due
Feb 19 Class 10	Energy Risk Management <i>Corporate Risk Management – Energy Derivatives</i>	<i>S&S Ch. 15-16, Ch. 19</i> CLR Readings
Feb 21 Class 11	Case: Apache <i>Energy Derivatives</i>	Case Memo Due
Feb 26 Class 12	***Mid-Term Exam*** In Class	
Feb 28 Class 13	Lecture: Project Finance: <i>Project Finance, VPPs, Joint</i> <i>Venture Agreements</i> Case: BP Amoco (A) <i>Project Finance</i>	<i>S&S Ch. 13</i> ATP Readings BP (A) Case
Mar 5 Break	Spring Break	
Mar 7 Break	Spring Break	
Mar 12 Class 14	Case: BP Amoco (B) <i>Project Finance</i>	Case Memo Due
Mar 14 Class 15	Lecture: Revisiting Real Options and Hedging	Bring your laptop to class
Mar 19 Class 16	Lecture: Corporate Governance in Energy	SD, CHK, HESS Posted Readings
Mar 21 Class 17	Case: Chesapeake Energy (HBS Case) <i>Corporate Governance in Energy</i>	Case Memo Due

Mar 26 Class 18	Tesla <i>Corporate Governance in Energy Pt 2</i>	Tesla Readings
Mar 28 Class 19	<i>Guest Lecture Placeholder</i>	
Apr 2 Class 20	Lecture: Energy Private Equity	
Apr 4 Class 21	Case: Energy Private Equity Pt 1	Focus Case Due
Apr 9 Class 22	Case: Energy Private Equity Pt 2	Focus Case Due
Apr 11 Class 23	<i>Guest Lecture Placeholder</i>	
Apr 16 Class 24	Case: Petrozuata Pt 1 <i>International Project Finance/Energy Investments</i>	Case Memo Due
Apr 18 Class 25	Case: SolarCity <i>The Finance of Renewables</i>	Case Memo Due
Apr 23 Class 26	Term Project Prep – Make Appointments	
Apr 25 Class 27	Presentation of Term Projects	
Apr 30 Class 28	Presentation of Term Projects	