

UNIVERSITY OF TEXAS AT AUSTIN
McCombs School of Business
Department of Finance

Finance 377, Topic 5, Unique #03085
Energy Financial Risk Management

Dr. Ehud I. Ronn
Spring 2018

Class Hours: MW, 11:00 – 12:30 p.m., UTC 1.116

Contact Info: CBA 6.270, eronn@mail.utexas.edu, 471-5853

Office Hours:

1. MW, 5 – 6 p.m. I hold office hours as an open meeting for all interested to pose questions regarding the presented materials, and past and concurrent problem sets.
2. When there are several students wishing to pose questions — such as prior to submission deadlines for problem sets, Midterm or Final Exams — we will revert to the more spacious Finance Dept. Conference Room.
3. This session will not take place on days I have out-of-town commitments requiring travel in afternoon hours.
4. For personal issues, including assistance with employment opportunities, please e-mail for an appointment.

Teaching Assistant: Raghav Sarathy
raghav.sarathy@utexas.edu

1. Response to students' clarifying questions regarding problem sets
2. Updating students who have missed classes

Course Prerequisites: FIN 367 Investment Management

Newspaper: Student rates available for *Wall Street Journal*. Subscribe through wsj.com/studentoffer

Textbook: **Derivative Markets**, Robert L. McDonald, Addison-Wesley, 2012. The 2nd Edition is an acceptable alternative.

The textbook serves as supplementary material; the course does not “follow” the book. Rather, the predominant material in this course is presented in the Lecture Packet.

Grading: The Final Grade in the course will be determined by the relation:

$$\text{Final Grade} = 0.5 \times \frac{\text{Final Exam}}{\text{Exam}} + 0.3 \times \frac{\text{Midterm Exam}}{\text{Exam}} + 0.2 \times \frac{\text{Problem Sets}}{\text{Sets}}$$

Class participation, especially helpful at the margins, will also be taken into consideration in the determination of the final grade:

1. Students’ display of their name cards throughout the semester is requested.
2. When posing questions in class, students assist not only their own comprehension, but perform a social role of assisting those of their peers who may have hesitated in posing these questions.
3. Consequently, class participation will be recognized, and can only *increase* (and never reduce) students’ grades.
4. Student tardiness in arriving to class will offset the beneficial impact of class participation.

Based on past pattern, the distribution of grades will likely be 40% “A”s, 45% “B”s, 10% “C”s and 5% below “C”. In accordance with University policy, plus/minus grading will apply to this course.

Problem Sets:

1. Approximately 15 problem sets will be disseminated and assigned throughout the semester.

2. These questions are designed to:
 - (a) Provide students with problem-solving experience
 - (b) Constitute mini-case studies
 - (c) Enhance understanding of markets, financial instruments, and financial risk management
3. As befits a professional school, students' responses to these problem sets should be neatly typed, clear and complete. Handwritten solutions will not be evaluated.
4. Students may submit the responses to problem sets in groups of up to four students.
5. Problem sets will be graded and returned to the students. If a graded problem set is not retrieved by the student (or on his/her behalf) when returned, the student may retrieve the problem set from the Teaching Assistant during the latter's office hours.
6. Problem set grades will be confidentially reported in Canvas (`canvas.utexas.edu`). This will permit students to confirm they have received credit for submitted problem sets.
7. Solutions to problem sets will be disseminated to the students via Canvas, as well as reviewed in class.

Case Studies:

FIN 377.5 is designed to provide students with a fundamental understanding of energy financial markets, in particular, futures and options contracts. As such, the scope for case studies is limited to the following case studies:

1. MW Petroleum Case (risk sharing; valuation of average-style options)
2. Hedging the Price Exposure of an International Air Carrier
3. Valuation of Power Plants

Copies of Handouts:

1. Most classes will begin with a handout covering administrative issues, occasional issues of topical interest, and problem set questions and solutions to previous problem sets.
2. Subsequent to each class session, handouts will be uploaded on Canvas (`canvas.utexas.edu`, “Files”) for student retrieval.
3. I request these documents not be shared, electronically or in paper form, with anyone outside the class.

Lecture Packet:

1. The Finance 377, Topic 5 Lecture Packet, constitutes a set of notes which includes the totality of material to be covered in the course, and students are encouraged to purchase the packet.
2. The FIN 377.5 Lecture Packet is not designed to be a *book*, but rather a detailed set of lecture notes requiring in-class attendance and active participation to be fully useful.
3. With a cover in *lunar blue*, the Packet will be available at University Duplicating Service, GSB 3.136.

Midterm Exam:

1. The Midterm Exam will be held in class on March 7th. I will provide at least two-weeks’ lead time if that date will need to be changed
2. The questions for the Midterm will be patterned after the questions contained in the problem sets (those requiring no more than a reasonable amount of data manipulation). Thus, students will be able to familiarize themselves with the format and types of questions to be encountered in the Midterm.
3. Prior to the Midterm, a list of review topics, containing concepts introduction in the first half of the semester will be disseminated in class.

4. Material presented by in-class visitors from industry and/or academia may be included in the Midterm.
5. A copy of the 2017 Midterm Exam and its Solution may be found towards the end of this class' Lecture Packet.

Midterm Teaching Evaluation:

Subsequent to the Midterm, I will conduct an anonymous (informal) midterm teaching evaluation.

Final Exam:

1. My reading of <https://registrar.utexas.edu/schedules/172/finals> indicates the Final Exam is scheduled for Sat. May 12, 2 – 5 p.m.
2. A list of review topics and sample questions will be distributed prior to the end of the semester. The review topics will briefly summarize the concepts introduced throughout the course.
3. As was the case for the Midterm Exam, the questions on the Final Exam will resemble those of the Problem Sets, and will include material on visitors' in-class presentations.
4. A copy of the 2017 Final Exam and its Solution key may be found towards the end of this class' Lecture Packet.

Class Presentations:

Here is the current lineup for Industry/External Academic Presentations:

| Company/University | Visitor(s) | Date |
|--------------------|--|----------|
| Southwest Airlines | Chris Monroe | Feb. 7 |
| Bloomberg | Jacqueline Aresco and Zef Lokhandwalla | Feb 14 |
| BofA Merrill Lynch | Rob Jones | April 11 |
| BP | Dominic Sung | April 18 |
| Chevron | J. Brent Faulk and Sean Coerver | TBA |
| ExxonMobil | Robert Gardner | TBA |

Class Auditors:

Per the Registrar Office's <http://www.utexas.edu/student/registrar/catalogs/gi01-02/ch3/ch3a.html>,

“A University student who wishes to audit a course should obtain a Class Auditor Permit from the Office of the Registrar and secure the consent of the course instructor and his or her dean. A nonstudent must obtain the Class Auditor Permit and the consent of the instructor. An audit fee of \$20 a course is assessed nonstudents under the age of sixty-five.”

Class Protocols:

1. Class begins promptly at 11 a.m., and on-time arrival is mandated
2. Display of name cards is appreciated
3. Laptop use for class purposes is permissible, but other use will be curtailed
4. A conduct of professionalism is expected:
 - (a) Disable phones and wireless devices. Please advise me of any critical need to communicate or anticipated early departure
 - (b) Uphold University Honor Code: Work on Midterm and Final Exams is *individual*; problem-set work may be communicated within the group but not outside the group

5. In order to assist qualified students, students with disabilities may request appropriate academic accommodations from the Division of Diversity and Community Engagement, Services for Students with Disabilities, (512) 471-6259, <http://www.utexas.edu/diversity/ddce/ssd/>.

Course Outline:

The objectives of this course are to give an introduction into the basics of energy trading as well as price formation mechanism in the oil and gas industry and to introduce students to the manner by which energy corporations manage their business risk (esp. price) exposures, and the derivative securities which can be utilized for this purpose:

1. General overview about trading (terminology, tools, etc.)
2. Overview of energy markets
3. Principles of risk management: Objectives and tools
4. Proper role of derivatives in firms' risk management
5. Differences between exchange and OTC Markets

Knowledge, Understanding and Subject Specific Skills: By the conclusion of the semester, students will have acquired the following:

- Understanding the main terminology used in the industry
- Understanding the formation of oil and gas prices
- Understanding the linkage between physical and financial oil & gas markets
- Understanding the role of financial markets as efficient conveyors of information and assessors of risk
- Understanding the valuation and role of futures contracts and swap agreements
- Understanding the principles of option and derivative-claim valuation, hedging and uses

- Understanding the structuring, reverse engineering and valuation of OTC derivatives

Key Skills: After completing this course the students will:

- Be familiar with much of the terminology used in energy markets
- Be able to take different perspectives (e.g., commercial vs non-commercial / energy producer vs. energy consumer vs investor/speculator)
- Be able to discuss energy-finance case studies
- Be able to understand and develop simple hedging structures in order to mitigate risk
- Be able to evaluate the pros and cons of certain hedging strategies and accurately judge risks involved

Summary:

1. The predominant material in this course is presented in the Lecture Packet.
2. Problem sets, some of significant scope, will be disseminated and assigned throughout the semester.
3. While math is used primarily to bolster intuition, students should be cognizant this Finance course is, in parts, highly quantitative. In particular, I will review those statistics concepts I deem necessary for proper class coverage.