



Derivatives
FIN 297 (section 03693)
Spring 2013

Instructor: Fernando Anjos

Location: GSB 3.130

Time: TTH 4:00PM- 6:00PM

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Office hours: Friday, 2:00PM-4:00PM

TA: Harvey Jing, CBA 3.332D, haiwei.jing@phd.mcombs.utexas.edu

TA office hours: MW 10:00AM-11:00AM

I. Overview

This class presents the main derivatives contracts traded in financial markets (organized exchanges and over-the-counter), with a focus on non-arbitrage valuation techniques. We will study discrete-time techniques as well as continuous-time approaches, and cover derivatives on several underlying assets: stocks, foreign exchange, indices, interest rates, commodities.

At the end of the course, students should: (i) master the mainstream techniques for the valuation of forwards, futures, swaps, and vanilla options; (ii) understand the drivers and conceptual approach underlying the valuation of more complex instruments (for example, credit default obligations); (iii) have an understanding of the economic rationale for the existence of derivative securities.

Finally, please note that the syllabus represents my current plans and objectives. As we go through the semester, those plans may need to change due to unforeseen contingencies and/or to enhance the class learning opportunity. These changes will be communicated clearly.

Prerequisite: Graduate standing and Business Administration 285T or 385T. Additional prerequisite: Finance 286 and 397 (Topic 1), and credit or registration for Finance 394 (Topic 1: Advanced Corporate Finance).

II. Lecture guide

The table below describes the material to be covered in each class (with some references when appropriate—also see point V below). Lecture slides will be posted online on Blackboard and distributed in class.

Class no.	Date	Content
1	Jan-15, Tues	Class objectives and policies Basic notions of futures and options <ul style="list-style-type: none">Hull, 2008, ch.1
2	Jan-17, Thurs	The economics of risk management <ul style="list-style-type: none">(mainly based on) Froot, Scharfstein, and Stein, 1994 Risk measures and the impact of derivatives
3	Jan-22, Tues	Mechanics of futures' markets <ul style="list-style-type: none">Hull, 2008, ch.2
4	Jan-24, Thurs	Determination of futures and forwards prices <ul style="list-style-type: none">Hull, 2008, ch.5
5	Jan-29, Tues	Futures and forwards on commodities – a closer look
6	Jan-31, Thurs	Mechanics of options markets <ul style="list-style-type: none">Hull, 2008, ch.8 Properties of stock options <ul style="list-style-type: none">Hull, 2008, ch.9
7	Feb-5, Tues	Trading strategies involving options <ul style="list-style-type: none">Hull, 2008, ch.10
8	Feb-7, Thurs	Valuation of options using binomial trees <ul style="list-style-type: none">Hull, 2008 (selected parts of different chapters)
9	Feb-12, Tues	Introduction to stochastic calculus <ul style="list-style-type: none">Hull, 2008 (selected parts of different chapters)Shreve, 2004 (selected parts of different chapters)
10	Feb-14, Thurs	EXAM 1 <ul style="list-style-type: none">Emphasis on lectures 3-8

11	Feb-19, Tues	The Black-Scholes-Merton model (1/2) <ul style="list-style-type: none"> Hull, 2008 (selected parts of different chapters)
12	Feb-21, Thurs	The Black-Scholes-Merton model (2/2) <ul style="list-style-type: none"> Hull, 2008 (selected parts of different chapters)
13	Feb-26, Tues	Interest rates <ul style="list-style-type: none"> Hull, 2008, ch.4
14	Feb-28, Thurs	Interest rate futures and swaps <ul style="list-style-type: none"> Hull, 2008, chs.6 and 7
15	Mar-5, Tues	Credit risk and credit derivatives <ul style="list-style-type: none"> Hull, 2008, chs.22 and 23
16	Mar-7, Thurs	EXAM 2 <ul style="list-style-type: none"> Emphasis on lectures 9 and 11-15

III. Homework assignments

The table below describes the content of homework assignments and posted/due dates. Homework assignments are to be completed individually.

HW no.	Date posted / Date due	Description
1	Jan-24 / Jan-31 (11PM)	Problem set on forwards and futures.
2	Jan-31/ Feb-7 (11PM)	Problem set on commodity futures. Problem set on options (payoffs, general price properties, trading strategies).
3	Feb-7/ Feb-12 (11PM)	Problem set on binomial model.
4	Feb-19/ Feb-26 (11PM)	Problem set on Black-Scholes-Merton model.
5	Feb-28/ Mar-5 (11PM)	Problem set on interest rate derivatives.

IV. Grading

There will be two 100-point exams, each covering a subsection of the material; and each counting 30% towards the final grade. Failure to attend an exam will result in a grade of zero.

Homeworks count 35% towards the final grade and are graded on a discrete 0-2 scale, where 0 is assigned if the homework is not handed in or is almost totally incomplete, 1 if it is visible that the student made an effort but the assignment is mostly incorrect, and 2 if most of the assignment is correct. Late homeworks are not accepted and will obtain a grade of zero. **Homework assignments will be posted online via Blackboard and are to be handed in also via Blackboard (digital dropbox).**

Class participation, also graded on a discrete 0-2 scale, counts 5% of the final grade and will depend on the effort you put into class discussions. A grade of 2 is reserved for students who consistently contribute to class discussion.

Your final point grade (out of 100 points) is then calculated as follows: $0.6 \times \text{Average Exam Grade} + 0.35 \times \text{Average Homework Grade} + 0.05 \times \text{Participation Grade}$. The passing grade for the course is 60 points. Students with point grades above 60 will be graded on the following curve: A (4.0) → 20%; A- (3.67) → 20%; B+ (3.33) → 20%; B (3.0) → 35%; B- or below → 5%.

Extra or make-up assignments are in general not possible.

V. Materials

This course has no required textbook and the material in the slides plus attending classes is enough to be able to complete the homeworks and do the exams. I will distribute slides and other handouts at the beginning of the class. A significant portion of the course is based on the following book, which you may want to buy if you plan a career path that makes heavy use of derivative securities:

Hull, John C., 2008, "Options, Futures, and Other Derivatives", 7th edition, Pearson

I also use some material from a more technical book, which provides a mathematically-rigorous treatment of continuous time and stochastic calculus (buy it only if you are into the math itself):

Shreve, Steven E., 2004, "Stochastic Calculus for Finance II – Continuous-Time Models", Springer

Students are expected to have a calculator that allows for log/exp functions at all classes; and use of the calculator will be helpful for class participation.

VI. Academic integrity

University of Texas Honor Code:

“The core values of The University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the university is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.”

Each student in this course is expected to abide by the University of Texas Honor Code. **[See the UT Honor Code above.]** Any work submitted by a student in this course for academic credit will be the student's own work.

You are encouraged to study together and to discuss information and concepts with other students. You can give "consulting" help to or receive "consulting" help from other students taking the same class. However, this permissible cooperation should never involve one student having possession of a copy of all or part of work done by someone else, in the form of an e-mail, an e-mail attachment file, a diskette, or a hard copy.

Should copying occur, both the student who copied work from another student and the student who gave material to be copied will both automatically receive a zero for the assignment. Penalty for violation of this Code can also be extended to include failure of the course and University disciplinary action.

During examinations, you must do your own work. Talking or discussion is not permitted during the examinations, nor may you compare papers, copy from others, or collaborate in any way. Any collaborative behavior during the examinations will result in failure of the exam, and may lead to failure of the course and University disciplinary action.

VII. Students with disabilities

Any student with a documented disability who requires academic accommodations should contact Services for Students with Disabilities (SSD) at (512) 471-6259 (voice) or 1-866-329-3986 (video phone). Faculty are not required to provide accommodations without an official accommodation letter from SSD.

- Please notify me as quickly as possible if the material being presented in class is not accessible (e.g., instructional videos need captioning, course packets are not readable for proper alternative text conversion, etc.).

- Contact Services for Students with Disabilities at 471-6259 (voice) or 1-866-329-3986 (video phone) or reference SSD's website for more disability-related information:
http://www.utexas.edu/diversity/ddce/ssd/for_cstudents.php

VIII. Conduct

In order for you to get the most out of this class, please consider the following:

- (i) Attend all scheduled classes and arrive on time. Late arrivals and early departures are very disruptive.
- (ii) Please do not schedule other engagements during this class time. I will try to make the class as interesting and informative as possible, but I can't learn the material for you.
- (iii) If you have trouble hearing the lecture or media presentation because of distractions around you, quietly ask those responsible for the distraction to stop. If the distraction continues, please let me know. It is often impossible for me to hear such things from my position in the classroom.
- (iv) Please let me know immediately if you have any problem that is preventing you from performing satisfactorily in this class.