1 Course Description

In the last 25 years there has been phenomenal growth in the markets for exchange-traded Options and Futures contracts on financial assets (foreign exchange, fixed income and equity securities, and stock indices) and on commodities. These derivative securities are used by individuals and by institutions to meet a variety of objectives. For example, the markets in options on stock indices and in futures contracts on Treasury securities allow managers to control the risk of their portfolios and alter the distribution of the returns on their portfolios. And options and futures contracts on commodities permit corporate treasurers to manage risk.

The growth in exchange-traded options and futures has been accompanied by innovation in over-the-counter “derivatives” (especially in contracts such as currency and interest-rate swaps). These “new” financial contracts are almost always equivalent to bundled portfolios of options, futures and their underlying securities. A solid grasp of options and futures helps us to understand these (more complex) objects.

While the techniques for the valuation of options and futures might at first glance appear advanced and difficult, they are easily and conceptually digestible. And in the process of learning these valuation techniques we will uncover many practical aspects of the use of options and futures.

The purpose of this course is to provide the student with the necessary skills to value and to employ options, futures, and related financial contracts. In order to provide a useful treatment of these topics in an environment that is changing rather rapidly, it is necessary to stress the fundamentals and to study some important applications. The topics that will be covered are

- Futures Markets & Their Applications, including the pricing and use of futures contracts on stock indices, on commodities, and Treasury instruments;
- Options Markets & Their Applications, covering the valuation and use of options, including a discussion of the empirical evidence and dynamic asset allocation strategies;
- Swaps, Complex Derivatives, Structured Securities including several cases, and the use (and misuse) of derivatives in the context of corporate applications.

I expect that a third of the course will be devoted to options, slightly less than a third to futures, and the remainder to more complex derivatives — although many applications are included in the coverage of options and futures markets, the final part of the course will employ several cases.

Pre-requisites: None. Basic knowledge of statistics from the core course is expected.

I recommend that you should have had Core finance; but if you’re willing to put in the hours to learn the relevant ideas of risk and return and the minimum understanding of institutional arrangements that are necessary to follow the class, you can enroll in the course without my permission.

Auditors need to check with me on the first day of class.
2 Office Hours

Office: 3259 SH-DH; ’phone 898-6206.

Office Hours: My posted hours are on

Mondays 3-4:30p
Tuesdays 1:30-3p

I’ll always be in (I may have stepped out but only for 5 mins) at these times. I have an open door policy generally, but it’s wise to call or e-mail if you intend to come by outside these posted hours.

I am unavailable (a) MW 10:30-12n, and 1:30-3p, when I am teaching this class; and (b) TTH 10:30-12n when I teach Financial Engg.

Dial-a-Question: 898-6206, for brief questions I might be able to save you some time.

Weekly TA Office Hours: Ruediger Fahlenbrach is the TA for this course. Times and locations will be announced in the second week of class, and included each week in the Weekly Memo (see below) you’ll receive as an e-mail.

3 Department of Notifications

1. Weekly Memos. I send e-mail by Thursday night to give directions to the entire class on what to read for the following week, as well as sample problems, Answers to Frequently Asked Questions regarding the Projects, Reminders and such. These e-mails will have a subject heading that begins with “SPEC MKTS!!”

2. Web Café: All handouts and class-related material will be available here.

3. E-Mails: When sending me e-mail, please use

   krishna@wharton.upenn.edu

   and do avoid hitting the [Reply] button to a general e-mail that I have sent to all students, for obvious reasons.

   You should be on the class e-mail list-server shortly after you register. If you drop the course, please send me an e-mail so you can be dropped from the list and shielded from the dreadful stuff I send your former classmates: that may take a few days, so please be patient.

4. Non-Whartonites: If you’re not from Wharton, then please do let me know your e-mail address so I can get you on the list-server.

5. Seating Plan & Pew Address: After the first class, stick to the seat you choose for the remainder of the semester. And please do plant your name-cards on your desk, at least for the first few weeks.

4 Text

There is no one ideal textbook for this course. My notes and my class coverage should be your primary source; in my weekly memos and in the web-Café I’ll post Sample Problems and their Solutions.

Here are some books to consider as supplementary sources:

1. Hull, John, Fundamentals of Futures & Options Markets, Prentice-Hall, Fourth Edition. It covers both futures and options and their applications. On the plus side, all the topics that I cover are discussed here,
and it has problems and exercises at each chapter’s end. However, it is very weak on intuition, and its treatment of markets and derivative strategies is not deep.

Please note that Hull has a more advanced text called *Options, Futures and Other Derivatives*. It is also published by Prentice-Hall and the current edition is the 5th. Students who have a quantitative background and prefer a technical exposition, or those who intend to take Financial Engineering next Spring may find this book more useful; on the plus side, it is a complete reference source, but unhappily, it is even shorter on intuition than the Introductory version. I recommend this book for the Financial Engineering Seminar. (Please note: if you already have this book I would advise that you have access — be able to borrow from someone, or come by my office to do so — the introductory version to skim it and see the chapter correspondence.)

2. Cox, John C and Mark Rubinstein, *Options Markets*, Prentice-Hall, 1985. This is an excellent but expensive book, around which the treatment of options in this course is designed. A well-thumbed copy belongs on every finance major’s bookshelf. It doesn’t have chapter-ending problems. But it does have the most useful treatment of the basic ideas of finance — corporate finance, even — that you will find anywhere.

3. Rubinstein, Mark, *Derivatives: A PowerPlus Picture Book*, a CD-ROM based, PowerPoint-employing, hyperlinked, spreadsheet-firing book which covers almost everything we’ll do in the first two-thirds of the course. It is available directly from the author from www.in-the-money.com, where you can examine a few pages. Mark’s book provides excellent intuition (as does his book co-authored with John Cox) and it is quite thorough. If you’re keen on the subject, if you’d like a slightly more technical exposition from a very knowledgeable author, and if you like to work through a CD-ROM workbook, this is a fine source.

There are a couple of other books that you may find useful as references, although I will distribute copies of certain chapters from these books. They are:

4. Arditti, Fred, *Derivatives*, HBS Press, 1996. It is good on intuition, and it has good discussion of applications and on all major derivatives, including swaps and mortgage derivatives. Unfortunately, it doesn’t have problems and examples worked out, as it is intended to be a resource book.

5. Siegel, Daniel R and Diane F Siegel, *Futures Markets*, The Dryden Press, 1990. I have placed several copies on Lippincott reserve, and interested students can come by my office to borrow a copy. This is an excellent book which I would recommend to anyone who goes into the futures business; it may be useful in the second part of the Group Project. My notes will draw on some material from this book.

**Summary:** My lecture notes and class coverage, together with one choice among

- Hull’s *Fundamentals of Futures and Options Markets*, or
- Rubinstein’s Picture Book on Derivatives, or
- Cox & Rubinstein

will suffice.
5 Course Requirements

The course grade will be based on

1. Two Group Projects: the first related to a hedging application using futures contracts and the second dealing with the valuation and use of options contracts. The project is to be done in groups of no more than 3 people: there will be no exception to this rule.

Descriptions of project requirements and the data will be distributed later. However, the second (Options-related) part involves some data collection — why not start now with your group to follow the options on a stock of your choice, even taking the step of cutting out the put and call prices on that stock, from the daily Wall Street Journal\(^1\) — but you can use the software package provided with Hull’s book (or you can use the computer programmes I place in the web-Café) to assist your analysis. These routines are canned — no expertise in programming is necessary.

**Weight, 35%**

2. Two mid-terms exams, on March 3 & April 14, from 6–8pm: closed-book and closed notes, but you may bring a single sheet of \(8\frac{1}{2} \times 11''\) paper with one side left blank.

**Weight, 50%**

3. One brief case write-up plus Class Participation, especially in the final third of the course when we discuss the assigned cases. The case write-up required will be brief (max 3 pages including exhibits) and can be done in groups of at most 3.

**Weight, 15%**

6 Mark Your Calendars/Organizers

Please mark the following important dates into your schedule for the term: these dates are lapidary *i.e., written in stone.*

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>1. Mon Mar 4</td>
<td>Mid-Term 1</td>
<td>Closed-book, Closed-Notes</td>
</tr>
<tr>
<td>2. Thu Mar 7</td>
<td>Project 1</td>
<td>Futures Project Due Date</td>
</tr>
<tr>
<td>3. Mon Apr 14</td>
<td>Mid-Term 2</td>
<td>Closed-book, Closed-Notes</td>
</tr>
<tr>
<td>4. Mon Apr 21</td>
<td>Project 2</td>
<td>Options Project Due Date</td>
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<tr>
<td>5. Wed Apr 23</td>
<td>Case Write-up</td>
<td>Due Date</td>
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All exam-related absences must now receive a prior OK from the Grad Division. All requests for regrades — even discussions of the grading — should be directed to me, in my Office Hours, and *not* to my TA.

7 Course-pack

A course-pack should be available from Wharton Reprographics. It contains a copy of my class-notes, as well as additional readings. I will bring the course-pack out in three sections:

<table>
<thead>
<tr>
<th>Section</th>
<th>Topic</th>
<th>When Available</th>
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<tbody>
<tr>
<td>A</td>
<td>Futures Markets &amp; Applications</td>
<td>Mon Jan 13</td>
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<tr>
<td>B</td>
<td>Options Markets &amp; Applications</td>
<td>Mon Jan 13</td>
</tr>
<tr>
<td>C</td>
<td>Derivatives &amp; Applications</td>
<td>Mon Jan 17</td>
</tr>
</tbody>
</table>

\(^1\)This will save you time in negotiating the labyrinth of Bloomberg when you begin working on the project.
The course-pack cost included a charge for additional pages which I distribute in class. Your bursar’s bill will be charged automatically for the actual cost of reproducing course materials. My estimate right now is that the total won’t exceed 550 pages.

One copy of the Instructor’s Manual to Hull’s Text (Fundamentals of . . .) will be placed on reserve at Lippincott by Jan 20: it contains (in the first half of that manual) the solutions to the problems in the back of Hull’s Chapters. Note that we’ll cover material only from selected Chapters.

8 Review Sessions

Weekly review sessions are so sparsely attended that I’ve decided that the TA and I will hold them just prior to the mid-terms and the final. So please use our (Rudi’s and my) office hours and call me with any questions you have. Rudi and I will hold Office Hours throughout each week, so you should have ample opportunities for doubt-clearing. And we will help you work through problems posted (with solutions) in the course down-load area.

9 Guest Lecture(s)

I may have one guest lecturer in late March/early April, probably at 5 pm, unhappily ruining the apéritif hour, but I might manage to have it in class; the material covered in these lectures is an important and integral part of this course.

10 Readings

As indicated in the first class, one must get more technical here than in the average Finance course if one is to provide a useful and correct treatment. Your approach to the readings, therefore, is very important. You should read with a view to grasping the concepts being discussed, and make every attempt to follow the mathematical treatment.

My Weekly Memo will direct you to do the readings and work at some problems. In general, it is best to read the text once before you see the material in the lecture, and afterwards review the material and try the problems.

I will hand out readings in addition to the lectures: these handouts will be clearly marked as “Class Handouts” and dated in the top margin. Most readings and lecture notes will be handed out on Wednesdays.

If you miss a lecture, then

1. the quickest way to get the material (if any) handed out that class is to get it from a colleague and xerox it; or

2. the next best way is to look for that handout, whose date will appear in its file-name, in my course download area. Whenever possible, I will create a PDF version that you can double-click on and print; or

3. you can drop by during my office hours and pick up a copy. If I’ve run out of copies, I’ll print one for you.

E & O E

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Required Reading