Course Objectives:
The principal objective of this course is to provide a detailed examination of options, futures, forwards, and swaps. By the end of the course students will have a good knowledge of how these contracts work, how they are traded, how they are used, and how they are priced. A major emphasis in the class will be on how derivative instruments are used by financial institutions in light of recent economic events.

Required Reading Materials:


Suggestions for Study:
I strongly recommend you read the assigned materials before we go over them in class then skim them again after class. I also encourage you to study in groups. Explaining a point to someone else forces you to really understand it yourself (trust me, I should know).

Office Hours:
My office hours are formally listed as Monday and Wednesday 9:00-10:30 a.m. However, I am happy to talk with you anytime I am in the office. I can be contacted via e-mail at michael.ferguson@uc.edu.

Weather Related Policy:
In the event that class does not meet either because the University is closed, or I cancel the class myself due to anticipated difficulty for people getting to or back from campus, I will clearly communicate via email and/or Blackboard how will make up any missed material. This may take the form of recorded lectures posted to Blackboard, outside readings, extra class sessions, rescheduling of topics, or some combination thereof.
This course aligns with PACE, the Lindner College of Business platform for developing the total business professional.

**P – Professionalism**
- Enhance oral & written communication, express ideas clearly, logically and persuasively.
- Develop and practice teamwork skills through group projects and exercises.
- Practice professional habits of punctuality, preparation, respect and participation.

**A – Academics**
- Develop foundational knowledge of core business functions and their interactions within firms.
- Begin applying functional and cross-functional knowledge to critically analyze business problems; for example applying techniques for business plan development.

**C – Character**
- Learn and apply leadership techniques for project management (plan, brief, execute, debrief).
- Build an understanding and initial skills of managing diversity, including understanding cultural differences, and challenges and opportunities of global business.
- Understand importance of ethics and social responsibility in business and personal settings.

**E – Engagement**
- Build understanding of importance and practices of networking through interactions with business professionals and guest speakers.
- Develop awareness and appreciation of involvement in social organizations, community service, and professional group opportunities.

**Instructional Methods (including description of Blackboard):**
This course utilizes the Blackboard (Bb) Learning Management System to provide student-centered online learning that will enhance the teaching and learning process. Through a variety of instructional methods (e.g. discussion boards, video lectures, readings, online assessments, etc.) the learner will become immersed and engaged in the learning process. If you are not familiar with these tools, please visit:

http://www.uc.edu/ucit/learningtechnologies/mobilelearn.html

Unless otherwise indicated, class handouts (including this syllabus) are available only on Blackboard. The notes I lecture from in class will be posted to Blackboard after we have finished going over them in class. During class I want you to be engaged with the material; taking notes and working problems, not merely reading the presentation.
Course Communication:

University policy requires that the email set up in Blackboard is the primary means of communication. It is advisable that you use your UC email for this purpose and that you check it often. If you choose to change your email in Blackboard to a non-UC email it is your responsibility to ensure you check it frequently. Please see the attached Student Email Policy for more information:

http://www.uc.edu/content/dam/uc/infosec/docs/general/Policy_StudentEmail.pdf

Student Learning Outcomes:

Upon successful completion of this course, the student will be able to demonstrate mastery of the following competencies:

- To expand your understanding of forward, futures, option, and swaps contracts;
- To be able to price and value forward contracts.
- To be able to price put and call options using the binomial model and the Black-Scholes-Merton model;
- To expand your knowledge of mortgage-backed securities;
- To expand knowledge of the major financial events of the past 30 years, especially the financial crisis of 2008.
Grading:

Your course grade will be determined using the weights:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Problem Sets</td>
<td>15%</td>
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<tr>
<td>Exam 1 option</td>
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<tr>
<td>Exam 2 option</td>
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<tr>
<td>Exam 3 (Final Exam)</td>
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<tr>
<td>Quizzes</td>
<td>25%</td>
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<td></td>
<td>100%</td>
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\[
\text{60\% total, see below}
\]

The exams will **not** be cumulative. The exams are closed book but you will be allowed to bring your calculator and 1 page of notes (8x11, front and back). **You cannot use devices that can communicate as your calculator during an exam!** For example, you cannot use laptops or smart phones apps. **Note:** you may use a financial calculator, but you do NOT need one for this class.

Problem Sets:

There will be 3 equally-weighted problem sets due during the semester. The Problem Sets will be done in groups of 2 or 3. Each group will submit one solution set for the group.

You will form your own groups. Designate one person in the group to email me the names of the members of your group by Wednesday, August 30.

Quizzes

This semester we will take quizzes in class via blackboard, so **you will need to bring your laptop to class on quiz days.** The quizzes will be short, closed book, closed notes; primarily based on the assigned readings for the week. To compute your semester quiz average, I will drop your lowest quiz score. Quizzes cannot be made up.

Exam Instructions:

The mid-terms and final exam will be paper-based, not online. The exams will **not** be cumulative. The exams are closed book; but because I don’t want you to have to memorize numerous formulas, you will be allowed to bring one page of handwritten notes (8x11, front and back). **You cannot use devices that can communicate as your calculator during an exam!** For example, you cannot use laptops or smart phones apps. **Note:** you may use a financial calculator, but you do NOT need one for this class.

**Free(!) Exam Option:** for the 3 exams, I will weight one of them 15%, one of them 20%, and the other one 25%, for a total of 60% of your grade. I will assign the greatest weight (25%) to your highest score and the lowest weight (15%) to your lowest score.
Tentative Course Outline and Schedule

August 21 – September 13:

The Bookmaker’s Parable

Introduction to Derivatives
  • Hull Ch. 1

Mechanics of Futures Markets
  • Hull Ch. 2

Overview of Interest Rates
  • Hull Ch. 4.1-4.6

Futures Pricing and Index Arbitrage
  • Hull Ch. 5

Futures Valuation and the Cost of Carry Model

Hedging Strategies Using Futures
  • Hull Ch. 3

September 15  Exam 1:  Mechanics of Futures Markets thru Hedging Using Futures

September 18 – October 13:

Swaps I:  Interest Rate and Currency Swaps
  • Hull Ch. 7

Swaps II:  Equity, Total Return, and Credit Default Swaps
  • Hull Ch. 23.1, 23.3, and 23.7

Swaps III:  Pricing and Valuing Swaps

Mortgages & Mortgages Backed Securities I:  Pre-payment Risk
  • Hull Ch. 8.1 and 22.2

Mortgages Backed Securities II:  Credit Risk
  • Hull Ch. 8.1 and 22.2

Derivatives Mishaps I:  Classic Cases and What We Can Learn from Them
  • Hull Ch. 25

Derivatives Mishaps II:  More and Bigger Losses

October 16  Exam 2:  Swaps thru Derivatives Mishaps II
October 18 – December 1:
  Introduction to Options
    • Hull Ch. 9

Properties of Stock Options
  • Hull Ch. 10

Trading Strategies Using Options
  • Hull Ch. 11

Binomial I: Introduction to Binomial Trees
  • Hull Ch. 12

Binomial II: Asset Price Dynamics and Multi-Step Binomial Trees

Binomial III: American Options

Binomial IV: Risk and Return

Binomial V: Portfolio Insurance

Black-Scholes-Merton I & II: The Pricing Formula and Volatility
  • Hull Ch. 13 and (skim) Ch. 19

Black-Scholes-Merton III: Valuing Equity as a Call Option

The Financial Panic of 2007 and Financial Crisis of 2008
  • Hull Ch. 8.2-8.4

December 8 Final Exam 8:00-10:00 a.m.
  • Intro to Options through the Financial Crisis
**Important Dates:**
Canceled Classes, Exams, Quizzes, Non-text Reading, and Problem Sets

**LTCM: When Genius Failed: The Rise and Fall of Long-Term Capital Management**

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Assigned Reading or Topic</th>
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<tbody>
<tr>
<td>9/4</td>
<td>No Class</td>
<td>Labor Day</td>
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<tr>
<td>9/15</td>
<td>Exam I</td>
<td>Intro to Derivatives &amp; Futures</td>
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<td>9/25</td>
<td>Quiz 1</td>
<td>LTCM: Introduction, Ch.1 &amp; 2</td>
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<td>10/6</td>
<td>HW 1 Due</td>
<td>Futures Pricing &amp; Index Arbitrage</td>
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<td>10/13</td>
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<td>FMA meetings</td>
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<td>10/16</td>
<td>Exam II</td>
<td>Swaps, Mortgages, &amp; Mishaps</td>
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<td>10/23</td>
<td>Quiz 2</td>
<td>LTCM: Ch. 3 &amp; 4</td>
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<td>10/30</td>
<td>Quiz 3</td>
<td>LTCM: Ch. 5 &amp; 6</td>
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<td>Quiz 4</td>
<td>LTCM: Ch. 7</td>
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<tr>
<td>11/8</td>
<td>HW 2 Due</td>
<td>Option Payoffs &amp; Binomial Valuation</td>
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<td>No Class</td>
<td>Veteran’s Day</td>
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<td>11/13</td>
<td>Quiz 5</td>
<td>LTCM: Ch. 8 &amp; 9</td>
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<td>11/10</td>
<td>No Class</td>
<td>Thanksgiving Break</td>
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<td>11/27</td>
<td>Quiz 6</td>
<td>LTCM: Ch. 10 &amp; Epilogue</td>
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<tr>
<td>11/29</td>
<td>HW 3 Due</td>
<td>BSM Valuation &amp; The Greeks</td>
</tr>
<tr>
<td>12/8</td>
<td>Final Exam</td>
<td>Options &amp; Financial Crisis</td>
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