University of Washington at Seattle
School of Business and Administration

Futures and Options - FIN 561

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Lectures: Mondays and Wednesdays 1:30 to 3:20 Room: BLM 304

1. Course Description

This course provides a comprehensive overview of futures markets and options markets. It analyzes the pricing of futures contracts and options as well as various price relations, and reviews available empirical evidence concerning these markets. Risk management by hedging is given particular attention. Futures, forward and options contracts are compared, and alternative investment strategies are discussed. The course is intended for MBA students.

2. Course Objectives

After completing this course you should be able to:

1) Describe the payoffs and the characteristics of the most commonly negotiated futures, forwards and options contracts on equities and interest rates.
2) Understand the relationship between rates with different compounding periods.
3) Apply the concept of arbitrage to identify and explore possible misspricing of popular derivative contracts, such as futures, forwards and options.
4) Use future and option contracts to hedge exposure to market and interest rate risk.
5) Understand the concept of duration and convexity.
6) Use the binomial model to price derivatives.
7) Use the Black and Scholes formula to price options and calculate their hedging ratios.

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3. Prerequisites

The prerequisite is Fin 509. Some homework assignments will require the use of Excel. The course is very demanding. The average student can expect to spend 8 hours/week outside the class on this course.

4. Course Requirements

The course requirements consist of problem sets and a take home final exam.

5. Problem Sets

Problem sets contain exam-type questions and computer exercises meant to help you practice on you own. I strongly encourage group work, with a limit of 4 students per group. Only one copy of the (joint) homework should be turned in. Please try not to change groups during the quarter. If you must change group, write a very clear and visible note on the cover of the first problem set after the change. Solutions to the problem sets will be provided for you.

If the solutions that you provide for the problem sets show serious effort then you will receive full grade for the problem set. If the solutions that you provide for the problem sets show some effort then you will receive half grade for the problem set. If the solutions do not show any degree of effort then you will not receive a grade for the problem set. The dates to hand in your answers to the problem sets will be indicated on their cover. Late problem set answers will not be accepted.

6. Questions and Office Hours

You can ask questions to me by e-mail.

I welcome your feedback on every aspect of the course. If you would prefer to be anonymous drop a note in my MKZ 125 mailbox. If you think that you will need extended help then e-mail me to make an appointment.

I encourage you to participate in the class. Don't be shy about asking questions to clarify what we are discussing. Every lecture and the course as a whole build on what we learned previously, so being lost gets very costly very quickly. At the other extreme, a good sign that you are asking too many questions is when the rest of the class starts noticing and the value of the class gets reduced for the other student.

7. Class Notes and Important Announcements

The class notes are in a packet that you can be bought at the University bookstore. I will post any class announcements and problem sets on the web. Consult the course web page frequently.

8. Exams and Grading

The final will be graded from 0 to 40 points. Your course grade is:

$$(0.7 * \text{final grade} + 0.3 * \text{problem sets grade}) /10$$

The final questions will be very similar to the problem set questions.

The final exam is a take home exam. The questions for this exam will be given to you on Wednesday, March 7th. The final exam is strictly individual. You must turn in your answers directly to me until, Wednesday, March 14th at 5:00pm. If you cannot find me, you may leave your answers below the door of my office (MKZ 267).

The re-grading policy for exams is:

1) If you think that a question in your exam was graded incorrectly, then write a very precise description of your concern and give it to me with your exam.
2) I will re-grade your entire exam. There is no guarantee that the grade initially assigned will not be lowered.
3) Re-grading of exams will only be considered within seven days of your receiving your graded exam back.

9. Class Attendance

Class attendance is not mandatory. I expect you to arrive on time for the class but if you arrive late, please do so in way that does not disturb the class.

10. Academic Accommodations

To request academic accommodations due to disability, please contact disabled Student Services, 448 Schmitz, (206) 543-8914 (V/TTY). If you have a letter from Disabled Student Services indicating that you have a disability that requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need in this class.

11. Administrative Notes

Please turn your cell phone off during the class. (If you really cannot turn it off then put it on silent.)

12. Textbooks and Web pages

There is no required textbook. You may choose to buy the following RECOMMENDED textbooks:

- McDonald, Robert L., Derivatives Markets, Addison Wesley, 2002.
- John Hull, Options, *Futures and other Derivative Securities*, 4th. Ed. Prentice-Hall, 2000. (On reserve at Foster library.)

You may also wish to buy the following books:

- Robert Jarrow and Stuart Turnbull, *Derivative Markets*, Second Edition, South-Western College Publishing, 2000.
- Mark Rubinstein, *Derivatives- A Power Plus Pictures Bookwww.in-the-money.com, 1999.*
- Daniel Siegel and Diane Siegel, *Futures Markets*, Dryden Press, 1990. (On reserve at Foster library.)

Out-of print, but a very good book on futures.

- Simon Benninga, *Financial Modeling*, 2nd ed. MIT Press, 2000. (On reserve at Foster library.)

This is NOT a book that specializes in futures and options. It is a "cookbook" for implementing common financial models (including options) using Excel.

- John C. Cox and Mark Rubinstein, *Options Markets*, Prentice-Hall, 1985. (On reserve at Foster library.)

This book is a classic in the field of derivatives pricing. If you wish to become a specialist in this field then you should check this book.

- Sundaresan, S., Fixed Income Markets and Their Derivatives, South-Western. (On reserve at Foster library.)

This book is about fixed income markets. If you think that you will end up working at the treasury department of a big corporation or at a fixed income trading and sales desk then I highly recommend this book.

13. Course Outline and Readings

The only required readings are the class notes. All the readings indicated below are recommended

THE CLASS NOTES DESCRIBE EACH TOPIC IN DETAILS. DURING THE CLASSES, WE MAY SKIP PART OF THE NOTES FOR TIME REASONS.

1. Trading room section and an introduction to futures, forward and options markets.

McDonald's chapter 1

2. Introduction to fixed income. Arbitrage in Stock Index Futures.

McDonald's chapters 7.1 and 2.1 5.1 to 5.4

3. Hedging

McDonald's chapters 4.5, 6.12

4. Short-Term Interest Rate Futures. Dollar value of one basis point. (DV01)

McDonald's chapters 5.7, 7.2

5. Treasury bond futures contracts. Duration. Convexity.

McDonald's chapter 7.3, 7.4

6. Interest Rate Swaps

McDonald's chapters 8.2

7. Introduction to Options Markets. Payoff diagrams. (Review of Fin 509)

McDonald's chapters 2.2 to 2.5.

8. Some option strategies. Covered Call Writing Protective Put. Caps, Floors and Collars.

McDonald's chapter 3.

9. Put Call Parity. (Review of Fin 509)

McDonald's chapter 9.

10. The Binomial Option Pricing Model.

McDonald's chapters 10.1 to 10.4, 11.1 and 11.2

11. The Black-Scholes Option Pricing Model. Implied Volatility. The Greeks.

McDonald's chapters 13 and 14.