The Course Material will be posted on the BAFI 430 section of my web page.

Overview:

Markets for futures, options and options on futures have mushroomed over the last decade, and new products continue to be introduced. Markets in Europe and Asia are growing rapidly as well. Indeed, over the last decade the volume of derivative trading has grown at an annual rate of about 30%. These financial innovations allow firms to lay off stock market risk, commodity risk, exchange rate risk and interest rate risk. Over-the-counter markets have experienced even more dramatic growth. Over the last 5 years they have grown 800%. Such contracts are tailor designed by brokerage firms and investment banks to meet the very specific needs of their corporate clients.

In BAFI 430 you will study the basics of forward, futures and option markets. You will learn how to use these markets in an intelligent way. Hedging and insuring applications will be covered in some detail.

After taking this class you will be able to:

- Communicate the risk management needs faced by the firm and to isolate the steps needed to solve the problem.
- Explain the why certain products and strategies create value while others do not.
- Distinguish when hedging is appropriate.
- Price contracts and prevent being ripped off.

In addition you will be aware of the impact of technology on trading strategies and of the choices of products, not only in the U.S., but also in Europe and Asia.

The array of options and futures, as well as other derivative securities is unbelievably large. An understanding of these products is essential for almost anyone interested in any aspect of corporate finance, even if the area excludes investments. For example, if your interests are in
mergers and acquisitions, international business or international finance, then an understanding of the valuation issues associated with derivatives is essential.

The course is a fairly standard lecture based class. The grade for the course will be determined as follows:

- Mid Term 40%
- Final 40%
- Homework 10%
- Project 10%

The **Mid Term Exam Date** will be scheduled on Monday March 2nd.

The **Final Exam** is scheduled for the Monday of exam week. (April 26th).

I have been invited to a very prestigious Financial Engineering Conference in Tokyo where I will be one of a few keynote speakers. This is a great opportunity for me to present my latest research and to be an advertisement for The Weatherhead School of Management. Unfortunately, this conference is held in the first week of the semester, so I will be unable to teach the second class. I arrive back, in Cleveland on Tuesday August 31st. Since the third MONDAY of the semester is a public holiday, if we cancel the second class, unless we have a make up class on September 1, 2, or 3rd I will only meet you for the second time on MONDAY 13th September.

1. **Monday August 23rd:**
   a. For the very first class, you will be given this syllabus, and a lecture that provides an overview of the class. We will try and schedule a make-up class to replace Monday August 31st. Perhaps on Thursday September 2nd?

2. **Monday August 30th**
   a. Class cancelled.

3. **Tentative Time for make Up Class (to be confirmed) Thursday September 2nd 8.15-10.15pm**
   a. I will meet with you for a make-up class (Lecture 2). The location of the class will be posted.
   b. I will arrange to have this class taped, so that if you miss it, you could get a CD of the full lecture.

4. **Monday September 6th:**
   LABOR DAY. No class.

5. **Monday September 13th**
   Regular class meeting from then on.

I hope this does not cause too much inconvenience. At the first meeting I will discuss the feasibility of having the make-up class meeting on Thursday September 2nd. If there are too many students with conflicts we will try and schedule a more convenient time, perhaps after September 13th.
Options and Futures Markets

Project

You can do the project in small teams or individually. The larger the team the bigger the scope of the project. I will make frequent suggestions for projects throughout the semester. The topic for your project can be in any area that involves risk management using derivatives. Once you have an idea, then you need to write it up in a couple of paragraphs and have it approved by me.

One goal of the project is to get you to do a bit of independent reading beyond The Wall Street Journal. **Risk Magazine** is an excellent source for ideas on project, as are chapters of the Hull Textbook that we do not cover in class.

There are also some wonderful web sites to visit, including the web sites at all the major Options and Futures exchanges. They have excellent educational programs that are free, and some great software tools that you can download. I will indicate some of the ones that I have found to be useful. If you find some great sites, please let me know. These sites may provide you with ideas for a project.

Projects will be due in one week before the final exam. My expectation for a deliverable project is somewhere between 10-25 pages, with Appendices containing the sources of information. If your work involves detailed computer development, or analysis of data, then I would expect you to demonstrate the software with me. In many cases it may be appropriate to schedule time with me, so as to go through the material with me. I will discuss the format of the projects in class.

Homework

1. Homework should be turned in on time, at the beginning of class. If you are unable to attend class, then e-mail the homework to the grader.
2. Do not bother to turn in late homework. Your lowest grade on a homework will be discarded.
3. All homework assignments carry equal weight.
4. Full solutions will be provided to the homework problems and posted in Blackboard.

Office Hours

1. I have office hours on **Monday afternoons, 3.45 –5.45pm.**
2. If you cannot see me during the scheduled window, you need to make an appointment to see me.
3. For part time students, perhaps you can call me in my office during office hours and I can respond to your questions on the phone or we can set up an appointment.
4. If you have urgent questions then you can e-mail me. All questions regarding grading of homework should be initially directed to the grader of the class. He will have office hours during which time he can assist you with any questions related to the homework, or she will review some of the material covered in class. **Please do not e-mail me your homework.**

Grader: To be announced
Tel. 368-5374

Peter Ritchken
Office: 3rd Floor (PhD area- middle of the building)  
Office Hours  To Be Announced.

Textbook:


  1. This is the standard textbook in the industry. If you are ever interviewed and asked at what level did you have a derivatives class, then answering at the Hull level, will immediately signal that you have had a well structured class and that you should understand the fundamentals of these products, the fundamentals of valuation, and the fundamentals of risk management.

  2. Homework problems may come from Hull or from the end of the chapters of my course notes.

  3. You should read the *Wall Street Journal*. In particular read the Options and Futures pages of Money and Investing Section and try and make sense of what the reports say.

- *Option and Futures for BAFI 430* course notes by Peter Ritchken, will be posted on my web page.

  1. I will NOT distribute copies of the chapters of my course notes in class.

  2. Some of my class overheads will also be posted on my web page for you to download. Please make sure you bring the class overheads to class. I MAY follow the overheads, but typically I deviate from them depending on the dialogue in the class.

Other Textbooks:

- *Fundamentals of Futures and Options markets*, Fifth Edition, John Hull, Prentice Hall. This book is aimed, primarily at the undergraduate market, and is less technical than his graduate text. It is very readable.


Recommended Study

- I recommend that you read the chapter (from Hull) we are going to cover before coming to class. If you have time then read my course notes as well. This will increase your understanding of the class material. A final reading after class should reinforce the concepts. Over time you probably will either gravitate to Hull or to my notes as a first source, depending on your learning style/preferences.

- I also recommend that you solve as many problems as you can. The Homework assignments are really the minimum set of problems that you should attempt.

Peter Ritchken
Those of you who desire to pursue a career in the financial industry may want references to other advanced textbooks and journal articles. I will be happy to advise you on such references and discuss additional material with you. Feel free to drop by my office.

A Tentative Course Outline

Below is a tentative course outline. We may adjust it from time to time depending on how the class proceeds. For example, we might focus in on certain topics in more detail. The risk management function will be emphasized throughout. Less attention will be placed on the actual market structures and operations of exchanges. I will assume that you have done all the readings that I assign, ahead of schedule.

An Overview of the Class.

Lecture 1:
Why is Risk Management Important?
Why do firms hedge?
Uncertainty in Equity Markets, FOREX, commodity markets, interest rates.
The wide variety of products.
Why are more products better than fewer products?
The law of one price.
Examples of the law of one price.
Interest rates, present values and money funds.
Forward Contracts.

Lecture 2:
Forward Markets and Futures Markets
Payoff diagrams
Valuing Forward contracts
Valuing Futures contracts.
The relationship between forward and futures prices
Pricing forward contracts.
Arbitrage relationships.
The term structure of futures prices and basis risk.

Readings: Chapter 1 (except 1.5, and 1.7); Chapter 2 (except 2.10); Chapter 3 of Hull.
Chapter 1 and 2 of Ritchken

Lecture 3 and 4
Hedging with Futures Contracts.
Basis risk
Long and Short Hedges.
Risk Minimizing Hedges.
Issues in Hedging. The MG Case Study
Swaps

Reading: Hull Chapter 4
Lecture 5
Options
Option Strategies.
Hedging with Options
The Computer Simulation Game.
The Wide Variety of Option Contracts.

Readings: Chapter 7 and 9 of Hull
Chapter 4 and 5 of Ritchken

Lecture 6
Option Arbitrage Relationships.
Pricing Bounds
Put Call Parity
Empirical Evidence.

Readings: Chapter 8 of Hull
Chapter 6 of Ritchken

Lecture 7
Modeling the Dynamics of Prices
Evolution of Uncertainty.
The Geometric Wiener Process
The Binomial Process
Confidence Intervals of Prices over time.
Computer Simulations in Excel.

Readings: Chapter 11 of Hull
Chapter 7 of Ritchken

Lecture 8 and 9
Option Pricing Models
The Binomial Option Pricing Model.
The Black Scholes Model
Simulating a Lognormal Process
Simulating Option Prices
Simulating Exotics

Chapter 10 of Hull
Chapter 12 of Hull
Simulation Presentations in Excel

Lecture 9 and 10
Risk Management with Options
The Greeks
Managing Non linear Risk
Identifying Toxic Waste!

Readings: Chapter 14 of Hull
Chapter 10 of Ritchken
Lecture 11
Pricing Options on Futures, Stock Indices, Foreign Currencies

Impact of Dividends
Merton’s Model
Examples on lattices
Risk Management of optioned positions

Readings: Chapter 13 of Hull

Special Topics (Time Permitting)
- Corporate Securities and Hybrids
- Credit Derivatives
- More on Why Firms Hedge?
- Capital Budgeting and the Value of Flexibility
- Real Options

Case Studies on The Use of Derivatives by Corporations.

To get ideas for Projects from Hull:
- Chapter 30: Derivative Mishaps.
- Chapter 29: Insurance, weather, and energy derivatives.
- Chapter 28: Real Options.
- Chapter 6: Swaps and Chapter 25: Swaps Revisited
- Chapter 19: Exotic Options.

To get more details than Hull, use the web as well as the references in Hull.
Also, feel free to come and see me to discuss possible projects.

Examples of papers that might help you with finding projects:
- “How Risk Management can Increase the Value of the Firm
- “Half a billion Gibson plays it dumb” Euromoney
- “Theory versus Practice: Does financial risk management increase shareholder value?” Smithson, Risk Magazine
- “Flexibility or Hedging?” Mello, Parsons, Triantis, Risk Magazine
Options and Futures Markets

- Goldman, Sachs and Company: Nikkei Put Warrants Case Study.
- Browse through RISK magazine, and Journal of Derivatives.