Futures and Options (B40.3335)

Fall 2010 (tentative)

Professor Menachem Brenner

Course Description: This is a course in derivatives markets: structure, valuation and strategies. The main applications include the equities markets, foreign exchange and commodities.
It has two parts: The first part deals with the structure of forward and futures markets, pricing and hedging with such contracts. The second and larger part deals with options markets; strategies, pricing and position analysis. It includes topics like: Short Selling, Value at Risk, Exotic Options, Volatility Derivatives and Trading Volatility. The course will consist of lectures, discussions and problem solving.

Prerequisites: All core courses. This course requires a basic knowledge of futures and options.
Remind yourself of the basic features of futures, calls, puts and payoff diagrams.

Exams and Grading: The final grade will be based on 4 problem sets and a final multiple-choice exam. The problem sets will have a weight of 4 x 7 =28% and the final a weight of 72%. class participation may improve your grade. The grade distribution is: A (25%-30%), B (50%-60%); C (5%-10%); D,F (remainder if any).

Problem Sets: Posted on Blackboard. There will be 8-9 problem sets. Only 4 of these are required to be handed in. Solutions to the problem sets will be provided after you have had a chance to solve them. Additional problems will be presented and discussed in class.

Required Material: You are responsible for the material covered in class, for all announcements made in class, for material posted on Blackboard and sent by e-mail. The problem sets and all handouts are part of the class material.

Required book: **Hull John** (H) Options, Futures and Other Derivatives, Prentice Hall, 2008.
The book is not a substitute for the lecture notes and class discussions. Some topics and details are not covered by the book.

Recommended book: Sundaram Rangarajan and Sanjiv Das, Derivatives, Principles and Practice. McCgraw-Hill/Irwin, 2010.

Market Tracking: You are expected to follow the markets on a daily basis. In particular, you should pay attention to 'fair value' of Gold, SPX and NDX futures, and implied volatility from index options (e.g. VIX, VXN). **Market tracking questions may appear on the exam.**
Your internet 'favorites' should include; CME, CBOE, **iseoptions, optionmetrics**.
You are also expected to read the financial press. Pay special attention to the futures and options columns in the **WSJ&FT.** You may also be interested in reading **RISK** and the **Economist.**

E-mail: Check your email regularly for additional material, announcements, assignments.

Office Hours: Tuesday 4:00-6:00 & by appointment; Rm. 9-55. KMEC

Homepage: Other information appears on the Stern Web Site (stern.nyu.edu/~mbrenner)

Classroom Responsibilities:

Class Attendance: Students are expected to attend all classes and be on time.

Cell phones: You should turn off your cell phone before you enter the class.

No Laptops, Blackberries, or any email/internet devices are allowed in class.

Honor Code: You are responsible for maintaining Stern's honor code.

Course Outline

Recommended Textbook: John Hull (H): Options, Futures and Other Derivatives, Prentice Hall, 2008, 7th edition.

I.   Overview of Derivatives Markets (H: Ch.1)

II.   Futures Markets

1.   Forward and Futures: Overview/Comparison

2.   The Structure of the Futures Markets (H: Ch. 2)

3.   The Cost of Carry Model (H: pp. 99-119)

      a)   Arbitrage Pricing; **Gold Example**

      b)   **FX** forwards , **Stock Index** Futures

4.   Hedging with Futures (H: pp. 47-62)

III. **Options Markets**

1. Options Strategies and Markets (H: Ch. 8, 10)

2. Options Valuation

   a) Arbitrage Conditions (H: pp.201-208)

   b) Put-Call Parity (Extended) (H: pp. 208-216)

   c) The Binomial Model (+ The American Put) (H: pp.237-248)

   d) The Black-Scholes-Merton Model (H: pp.277-287, 291-294)

   e) Options on FX, Indices, Futures (H: pp. 330-335)

   f) Volatility; "smiles" and "skews" (H: pp. 389-397)

   g) Sensitivity Analysis (the Greek letters) (H: pp. 357-376)

3. Risk Management (H: pp. 451-453)

4. Exotic Options (H: Ch. 24, optional)

5. Applications: Structured Products, ESO