# Futures and Options (GB.3335.00)

# Fall 2012

# 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**: Due to the intensive nature of the course, there will only be a final exam (multiple-choice exam). Class participation may improve your grade. The grade distribution is: A (25%-35%), B (50%-60%); C (5%-10%); D, F (remainder if any).

**Problem Sets**:  Posted on Blackboard. There will be 7-8 problem sets. Solutions to the problem sets will be posted after you 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) <u>Options, Futures and Other Derivatives</u>, Prentice Hall, 8th ed.
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,** <u>Derivatives, Principles and Practice.</u> 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: Wednesday 2:00-4:00, Thursday 4:00-6:00 & by appointment.**

**Office; 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, 2011, 8th 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. 101-120)

    a)  Arbitrage Pricing; **Gold Example**

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

4.     Hedging with Futures (H: pp. 48-64)

**III.     Options Markets**

1.     Options Strategies and Markets (H: Ch. 9, 11)

2.     Options Valuation

    a) Arbitrage Conditions (H: pp.214-221)

    b) Put-Call Parity (Extended) (H: pp. 221-230)

    c) The Binomial Model (+ The American Put) (H: pp.253-265)

    d) The Black-Scholes-Merton Model (H: pp.299-310, 313-315)

     e) Options on FX, Indices, Futures (H: pp. 350-355)

    f) Volatility; "smiles" and "skews" (H: pp. 409-417)

    g)  Sensitivity Analysis (the Greek letters) (H: pp. 377-397)

3.     Risk Management (H: pp. 471-473)

4.     Exotic Options (H: Ch. 25, optional)

5.     Applications: Structured Products, ESO