CMSC5718 Introduction to Computational Finance

Term 2, 2016-17

Instructor: Dr. Ka Lok Chau (klchau@cuhk.edu.hk)

Class hours: Thursdays 7:00-10:00pm
January 12, 2017 to April 7, 2017

Venue: WMY_508, Wu Ho Man Yuen Building, CUHK Campus

Course description

This class would be divided into two parts. The first part will concentrate on Modern Portfolio Theory and related concepts. In the second part, models for financial derivatives will be presented. We will look at the implementation of these models and practical applications of these techniques. Throughout the course, in additional to the theoretical aspects, real world products and strategies will be discussed.

Recommended textbooks

1. Elton, Edwin, Martin Gruber, Stephen Brown, William Goetzmann. *Modern Portfolio Theory and Investment Analysis*. 7th edition. Wiley, 2007
2. Hull, John C. *Options, Futures, and Other Derivatives*. 9th edition. Prentice Hall, 2014. (Earlier editions can also be used)
3. Joshi, Mark S. *The Concepts and Practice of Mathematical Finance*. 2nd edition. Cambridge University Press, 2008.
4. Luenberger, David G. *Investment Science*. Oxford University Press, 1998.

Grading scheme

1. Two individual / group exercises, 25% each, total 50%
2. Final exam (2.5-hrs, open book), 50%
3. An optional assignment can be submitted with a maximum of 5%

Schedule

12/1/2017	Introduction to Financial Markets
19/1/2017	Modern Portfolio Theory (I)
26/1/2017	Modern Portfolio Theory (II)
2/2/2017	**No class (Chinese New Year week)**
9/2/2017	Equilibrium in capital markets: CAPM and APT
16/2/2017	Equity Portfolio Management [1-hr tutorial session]
23/2/2017	Performance and risk measures **Assignment 1 due**
2/3/2017	Derivative market and instruments
9/3/2017	Pricing model (I): Black-Scholes pricing framework
16/3/2017	Option hedging and related issues **Optional assignment due**
23/3/2017	Some professional trading strategies
30/3/2017	Pricing model (II): Tree models and Monte Carlo Methods [1-hr tutorial session]
6/4/2017	Product analysis: ELN, warrants, CBBC, accumulators, complex structures **Assignment 2 due**

Tentative date of final examination: **April 20, 2017, 7:00-9:30pm** (to be confirmed)

Guideline for plagiarism

Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations. Details may be found at http://www.cuhk.edu.hk/policy/academichonesty/.

With each assignment, students will be required to submit a signed declaration that they are aware of these policies, regulations, guidelines and procedures. In the case of group projects, all students of the same group should be asked to sign the declaration, each of whom is responsible should there be any plagiarized contents in the group project, irrespective of whether he/she has signed the declaration.