SYLLABUS

Mathematics of Finance

Fall 2012

Instructor

Hana Kogan
Office: 1311 CIWW
Office Hours: Mon, 10:30-11:30. Also by appointment.
email: hk855@nyu.edu
website: BlackBoard

Class Times

Lecture: Monday and Wednesday 9:30-10;45, MEYER 261
Recitation: Friday 12:30-1:45; CIWW 317 (Instructor: Soohoon Lee, 317 CIWW)

Prerequisites

It is assumed students have taken three semesters of calculus and have some prior knowledge of probability and statistics. Time will be spent reviewing basic probability.

Course Objectives

- Become familiar with the concepts of mathematical modeling and financial engineering

- Understand basic probability and stochastic processes and their applications in finance

- Write simple computer code to run Monte Carlo simulations and optimize objective functions

Requirements

1. **Homework** Homework will be posted to the BlackBoard by the end of each week and will be due the following Friday. Homework assignments will account for 15% of the course grade. Assignments are due at the start of the recitation; late homework will not be accepted. If you can not attend the recitation, please make sure to turn in the

home work to the TA by an alternative means. (I ecxpect the TA to set up a place for you to drop in your HW). Two lowest HW grades will be dropped when the final average is calculated.

Each student must complete their own homework assignment and show evidence of their own thought (not copied from another student's paper). For problems requiring the use of a computer, please provide physical printouts of all code and plots; no emailed assignments or parts will be accepted.

2. **Exams** There will be two in-class exams (20% each) as well as a final exam (25%).

3. **Quizzes** Short in–class quizzes will be given periodically throughout the semester and will account for 20% of the course grade. The date of each quiz will be posted to the BlackBoard and will test basic knowledge of current material. Two lowest quiz grades will be dropped when the final average is calculated

4. **Attendance** Attendance will not contribute to the final grade, but is highly recommended.

5. **MatLab** The homework assignments will include problems requiring the use of a computer. No prior experience is necessary. The students must use MatLab to produce the programs.
Possibilities to access MatLab software:

   - On computers in the Multimedia Lab 35 West 4th St
   - Register for the Virtual Computer Lab (VCL)
     `http://www.nyu.edu/its/vcl/`
   - Purchase a student copy of MatLab from the University Computer Store for $99.00

6. **Textbook** The required text is Marek Capinński and Tomasz Zastawniak, *Mathematics for Finance: An Introduction to Financial Engineering*, Second edition. In addition, Sheldon M. Ross, *An Elementary Introduction to Mathematical Fiance*, on reserve in the library, and Wikipedia provide alternative explanations and additional information that may be useful and/or interesting.

Other Information

- All policies set forth by the university in regards to student codes of conduct apply to this course. In particular, action will be taken if students are found to be cheating. Please refer to the NYUPolicy on Academic Integrity.

- Students participating in University Sponsored events (sports teams for example) who know in advance that they will miss exams MUST make arrangements ahead of time to schedule make-ups. In addition, a note is required to verify participation in such event. The same applies to student who will miss an exam due to religious holiday observance.

- Unscheduled emergencies that cause students to miss exams will be considered on a case by case basis with proper documentation. Emergencies include (but are not limited to) hospitalization and travel due to hospitalization or death.

Course topic outline

An attempt will be made to cover Chapters 1-8 of the text in their entierty. A weekly schedule will appear on the BlackBoard.