Mathematics of Finance

Fall 2013

Instructor

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Class Times

Lecture: Monday and Wednesday 9:30-10:45 in CIWW 312
Recitation: Friday 12:30-1:45 in Godd B02

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 the mathematics used in finance: basic probability, stochastic processes, and optimization

- Write simple computer code to implement models and utilize real word data

Requirements

1. **Homework** Homework assignments will account for 15% of the course grade. Assignments are due at the start of class or recitation unless otherwise noted; late homework will not be accepted. You may also submit assignments to my mailbox in the Courant Lobby.

   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, electronic submission of code is required; details on how appear with the homework assignment.

2. **Exams** There will be two in-class exams (20% each) as well as a final exam (30%).

3. **Quizzes** Short in–class quizzes will be given periodically throughout the semester and will account for 15% of the course grade. The date of each quiz will be announced in class and will test basic knowledge of current material.

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. It is recommended that students use the language MatLab to write programs and produce graphs. Assignments completed in other programming languages (Python for example) may be accepted *only after permission by the instructor is given.*
   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 Capiński and Tomasz Zastawniak, *Mathematics for Finance: An Introduction to Financial Engineering.* In addition, Sheldon M. Ross, *An Elementary Introduction to Mathematical Finace*, on reserve in the Courant library, and Wikipedia provide alternative explanations and additional information that may be useful and/or interesting.

Course Topic Outline

An attempt will be made to cover Chapters 1-8 of the text in their entirety. Sections covered will be posted on NYUClasses, approximately a week in advance. Exact dates for homework assignments, quizzes, and exams will be provided in class, and updated online.

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.

- 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.

- 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.