University of Colorado Leeds School of Business

Derivative Securities FNCE 4040 Spring 2009

Instructor: Nathalie Moyen Office: Koelbel 483 Office Hours: Tuesdays and Thursdays 12 to 1:30pm, or by appointment E-Mail: moyen@colorado.edu Phone Number: 303-735-4931

Motivation and Course Description

Derivatives markets have grown both in volume and in sophistication over the past 35 years. The 1970's have seen periods of high volatility following the collapse of the Bretton Woods system and the oil shocks, among other events. The derivatives markets grew in part because it enabled participants to reallocation risk to those most fit to bear it. The derivatives markets became more sophisticated as a result of important theoretical contributions, such as the Black-Scholes formula recognized by the 1997 Nobel Prize in Economics, and greatly improved computational capacities. Most recently, various types of collateralized debt obligations have been at the center of the recent housing and banking crises.

In order to participate in this modern finance environment, the course provides a description and an analysis of the basic types of derivative securities including forwards, futures, swaps, and options. The course is focused on pricing of derivatives and their use to hedge unwanted risks associated with movements in interest rates, exchange rates, stock prices, commodity prices, etc. At the conclusion of the course, the student should be able to price most types of derivatives and use them to construct hedging strategies.

Course Materials

- Required
 - McDonald, Robert, Fundamentals of Derivatives Markets, Pearson, 2009.
 - Harvard Business School Case #9-298-029.
- Suggested
 - Hull, John, Fundamentals of Futures and Options Markets, Sixth Edition, Pearson, 2008.

All other materials, including lecture notes, will be posted on CULearn.

Prerequisites

This elective course requires a core knowledge of finance. It also requires a working knowledge of algebra, calculus, and statistics, only because these instruments enable us to study derivative securities with the most clarity. The material covered in FNCE 3010 and FNCE 3020 satisfies the prerequisites of the course.

Tentative Outline

- Introduction
- Futures and Forwards
 - Institutions
 - Pricing
 - Hedging
- Swaps
- Options
 - Institutions
 - No-Arbitrage Relationships
 - Trading Strategies
 - Binomial Pricing
 - Models of Stock Returns
 - Black-Scholes Pricing
 - Beyond Black-Scholes
 - The Greeks
 - Corporate Hedging
 - Monte Carlo Pricing
- Risk Management
 - Value at Risk
 - Estimating Volatilities
 - Credit Risk
- Applications
 - Corporate Securities
 - Real Options

Strategies for Learning More Efficiently

- Download the lecture templates available on CULearn. Each lecture template will be posted prior to class. Note that, to encourage active participation, the posted lecture notes are incomplete.
- Complete your class notes by reading the sections of the textbook recommended on the lecture templates. Practice the problems recommended on the lecture templates. The solutions to those problems are provided in Mark Cassano's Student Solutions Manual accompanying the McDonald textbook.
- Work in groups and learn from your classmates.
- Ask clarifying questions in a timely manner.

Evaluation

The evaluation consists of class participation, five homeworks, two mid-term exams, a final takehome exam. Homeworks will be posted on CULearn. For homeworks, you may work in a group of up to four students. Homeworks are due at the beginning of class; no late homework or electronic copy will be accepted. No make-up exam will be given, except with documented excuses consistent with university policy.

The final take-home exam will be graded on a total of 125 points. Each mid-term exam will be graded on a total of 150 points. To give you flexibility, 75% of your better mid-term points and 25% of your worse mid-term points will count toward your final grade. Each homework will be graded on a total of 20 points. Class participation will count for a total of 25 points. No letter grades will be assigned for individual exams. A final letter grade will be awarded based on your total score out of 400 possible points.

In case you are not satisfied with your score on a homework or an exam, you will need to provide a written explanation on why you feel you deserve more points. Explanations should be precise and should pertain to the content of your homework or exam only. A reevaluation request for a particular question will entail a reevaluation of the entire homework or exam. As a result, your revised score may go up, stay the same, or move down relative to your initial score. Homeworks and exams originally written in pencil will not be regraded.

Please mark your calendar:

Homework $\#1$	Thursday January 22
Homework $\#2$	Thursday February 5
Homework $#3$	Thursday February 19
Review	Tuesday February 24
Mid-Term Exam #1	Thursday February 26
Homework $#4$	Thursday March 12
Class Canceled	Thursday March 19
Homework $\#5$	Thursday April 2
Review	Tuesday April 14
Mid-Term Exam #2	Thursday April 16

Classroom Behavior

Always bring your name card and display it on your desk. Turn your cell phone off or put it in silent mode. Use your laptop for note-taking only. Classroom behavior will be evaluated as part of the class participation grade. Moreover, violations of the University of Colorado's *Honor Code* (http://www.colorado.edu/academics/honorcode/) will be met with swift and certain punishment to the full extent of the regulation.