NORTHWESTERN UNIVERSITY
KELLOGG GRADUATE SCHOOL OF MANAGEMENT

Finance 465 — Professor Kathleen Hagerty
Derivatives I, Sections 61 — Fall 2006
Office Hours: Monday 3:00-4:00 pm or by appointment
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COURSE DESCRIPTION

In recent years there has been considerable growth in the markets for futures and options; and there has been phenomenal growth in the markets for futures contracts on financial assets, as well as options on these assets. These markets are used by individuals and institutions to meet a variety of objectives. With these instruments, firms and portfolio managers can hedge particular kinds of risk or alter the distribution of the returns on their portfolios in certain ways.

There is sizable literature on option and futures valuation. While the theory might at first glance appear advanced and difficult, it is in fact quite accessible. The purpose of the course is to provide the student with the necessary skills to value and to employ options, option-like instruments and futures. In order to provide a useful treatment of these topics in an environment that is changing rather rapidly, it is necessary to stress the fundamentals and to explore the topics at a technical level.

REQUIRED TEXTS: McDonald, Robert, Derivatives Markets, 2nd Edition

COURSE WEBPAGE

My lecture notes, copies of the homework assignments and old midterm and final exams are available there. In addition, there are links to other sites related to derivatives.

COURSE REQUIREMENTS

Homework: There will be weekly homework assignments except for the week of the midterm (no homework given out on October 26). The homework will be given out every Thursday and will be due the following Thursday. The homework assignments can be done in groups of up to four people. If you prefer to work alone, that is okay. Please hand in one set of answers per group. **No late homework is accepted**. Solutions are passed out the day the homework is due. All handouts (i.e. problem sets and answers) are also available on the course web page.

There will no be class on November 30. There will be a review session on Saturday, December 2 from 10-11:30am. The room will be announced later.

Exams:

1. There will be a very short quiz (10 minutes or less) which will be posted to the web page each week on Thursday and will be due on the following Thursday, the day the homework is due. **The first quiz is due September 28**. You should download the quiz and take it in a contiguous 10 minute interval. You should not receive any assistance on the quiz from anyone. There will be **no quiz on Thursday, October 26**. Only the top five out of the seven quiz scores will count toward the grade.

2. The **midterm** will be a take-home timed test. I will post the midterm on the Finance 465 course webpage by **5:00 p.m. on Thursday, October 26.** You should download the exam and take it in a contiguous 90 minute interval. You should not receive any assistance on the exam from anyone. **The midterm is due by 5:00 p.m. on Monday, October 30 in the Finance Department.** No late midterms will be accepted.

3. The **final exam** time is Thursday, December 7 at 9 am.
You must take the exam at the scheduled time.

The grade will be the **maximum** of:

{Quizzes (15%)/ Homework (20%) /Midterm (25%) / Final (40%)}
or
{Quizzes (15%)/ Homework (20%) / Final (65%)}.

COURSE OUTLINE

The following is an outline of the course, which is subject to change. The corresponding readings are given below.

I. **Introduction to Derivatives (**Week 1 & 2)
a. Definitions and Profit Diagrams — McDonald, Chapters 1, 2, 3 and 4
b. Corporate Securities

II. **Forwards and Futures** (Weeks 2, 3 & 4)
a. Institutional Structure

b. Pricing — McDonald, Chapter 5

c. Financial Futures — McDonald, Chapter 5

d. Commodity Futures — McDonald, Chapter 6

e. Swaps — McDonald, Chapter 8

III. **Option Pricing**

a. Distribution-free properties of options (Weeks 5 & 6)
1. put-call parity
2. arbitrage restrictions on option prices — McDonald, Chapter 9

b. Binomial Option Pricing (Weeks 7 & 8)
1. Valuing European Options
2. Valuing American Options and the Value of Early Exercise
McDonald, chapters 10

c. The Black-Scholes Model. (Week 9 &10)
1. Basic Formula
2. Greeks — McDonald, chapter 11
3. Delta Hedging — McDonald, chapter 12