

Syllabus: Financial Derivatives 206/717
Wharton, University of Pennsylvania

Prof. Philipp Illeditsch

Fall 2014

Instructor

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Office hours: Thursday 4:30pm–6:00pm.

Please make an appointment if you would like to meet outside of office hours.

Teaching Assistants

There will be several Teaching Assistants for the course. Their contact information and office hours will be posted on Canvas. The TA office hours will take place in the TA cubicles in the Finance Department (2300 SH-DH).

Course description

There has been a dramatic growth in markets for financial derivatives in recent years. Modern managers can use financial derivatives such as futures, options, and swaps to hedge particular kinds of risk or to change the returns on their portfolios in certain ways. The purpose of this course is to provide the student with the necessary skills to value and to employ futures, options, and other related financial instruments. In order to provide a useful treatment of these topics it is necessary to stress fundamentals and to explore topics at a somewhat technical level.

Prerequisites: NONE.

The following introductory Finance and Statistics courses are recommended but not required:

FNCE 206: FNCE 100, FNCE 101, STAT 101-102

FNCE 717: FNCE 601, FNCE 602, STAT 621

Class times and locations

FNCE 206 Section 001: MW 12:00-1:30pm, JMHH 250

FNCE 206 Section 002: MW 3:00-4:30pm, JMHH 250

FNCE 717 Section 001: MW 1:30-3:00pm, JMHH 250

Exceptions:

There will be no class on the following days:

Monday, September 1 (Labor Day)

Wednesday, October 22 (Midterm Exam)

Wednesday, November 26 (Thanksgiving)

Exams

There are two mandatory exams. The midterm exam is on Wednesday, October 22 in class, and you have to come to the section you are registered for. The final exam takes place on Thursday, December 18 from 6:00-8:00pm, according to the University Registrar's office.

Undergraduate students who are unable to take the exam must petition their dean's office for a makeup exam. MBA students who are unable to take the exam must petition the MBA Program Office.

Both exams are closed-book, closed-notes. For each exam you may bring a single letter-size *handwritten* formula sheet. You may write on both sides of this sheet.

Problem Sets

No late assignments will be accepted.

There are six problem sets. These can be tackled in groups of up to five students. Completed assignments will be graded on the following scale, $\sqrt{-}$, $\sqrt{}$, $\sqrt{+}$. Problem sets are due *at the start of the class you attend*, on the dates shown below. Your group can be composed of students from different sections of the class; however, in this case you must submit the problem set at the beginning of the earliest section that one of your members is enrolled in.

Problem set solutions should be clearly written and should explain your thought process. If you submit a printout from a spreadsheet, please make sure to label it carefully. *You must submit a paper copy of your solution. I will not accept electronic copies.*

	Due date
Problem Set 1	Monday, September 15
Problem Set 2	Wednesday, October 1
Problem Set 3	Monday, October 20
Problem Set 4	Wednesday, November 5
Problem Set 5	Wednesday, November 19
Problem Set 6	Monday, December 8

I will post the grade for each problem set on Canvas. Please make sure you check your grade and report any errors as soon as possible and at the latest within two weeks of the problem set's due date. I will not accept any inquiries afterwards.

The solution to each problem set will be posted after your answers have been turned in (see table with deadlines). Your graded answers will be returned to a file cabinet in the Finance Department. I will not discuss the solutions to problem sets in class, but I encourage you to come the TAs' or my office hours if you have any questions.

Books

The book for this class is:

Derivatives Markets (3rd edition), by Robert L McDonald.

Copies of the book are available at the campus bookstore.

As an additional reference, I also recommend

Options, Futures and Other Derivatives (8th edition), by John C Hull.

If students are interested in a more advanced (and more mathematical) text, I recommend *A Course in Derivative Securities: Introduction to Theory and Computation*, by Kerry Back.

Exams will be based only on material covered in class and in the accompanying problem sets.

Lecture notes etc.

This is a paperfree class. I will distribute all readings and lecture notes electronically via Canvas. I will always make sure to post my lecture notes on Canvas *prior* to class. If you wish to take notes directly on these lecture notes, please make sure to print out a set before class. I will *not* distribute paper copies in class. There is no bulkpack for this class.

I will also use Canvas to post the problem sets and the problem set solutions.

Course requirements

Your final grade will be based on your performance on the problem sets and the two exams. I will base your overall grade on one of the two weighting schemes below; for each individual student, I will use the weighting scheme that is more favorable for him/her.

	Weighting 1	Weighting 2
Problem sets	20%	20 %
Midterm exam	40%	25 %
Final exam	40%	55 %

Review sessions

There will be a review session before each of the two exams. Time and location TBA.

Classroom behavior

Laptops may be used for note-taking only. Surfing the web is very distracting for students around you. Turn your cell phone off. **DO NOT LEAVE THE CLASSROOM TO TAKE A PHONE CALL!**

Academic integrity

May I remind you that your work and conduct will be held accountable under the University of Pennsylvania's *Code of Academic Integrity*. Violations of this Code will be met with swift and certain punishment to the full extent of the regulation. You can find a copy of the code at:

<http://provost.upenn.edu/policies/pennbook/2013/02/13/code-of-academic-integrity>

Course outline

- Introduction
Recommended Reading: McDonald 1
- Forward Contracts on Financial Assets
Recommended Reading: McDonald 1.5, 2.1, 5.1, 5.2, 5.3, 5.5
Recommended Problems: McDonald 2.1, 2.2, 2.6 – 2.9, 2.15, 5.2 – 5.10, 5.13, 5.14, 5.15
- Futures Contracts on Financial Assets
Recommended Reading: McDonald 5.4
Recommended Problems: McDonald 5.11, 5.12, 5.16, 5.17
- Commodity Futures
Recommended Reading: McDonald 6
Recommended Problems: McDonald 6.1 – 6.12
- Forward Rate Agreement, Eurodollar Futures, Currency Futures
Recommended Reading: McDonald 5.6, 5.7, 7.1, 7.2
Recommended Problems: McDonald 5.18 – 5.20, 7.1 – 7.19
- Treasury Bond Futures and Repurchase Agreements
Recommended Reading: McDonald 7.4, 7.5
- Swaps
Recommended Reading: McDonald 8
Recommended Problems: McDonald 8.1 – 8.18
- Introduction to Options
Recommended Reading: McDonald 2.2 – 2.5
Recommended Problems: McDonald 2.3 – 2.5, 2.10 – 2.14, 2.16
- Hedging with Options and Put-Call Parity
Recommended Reading: McDonald 3.1 – 3.3, 9.1
Recommended Problems: 3.1 – 3.20, 9.1 – 9.7
- American options
Recommended Reading: McDonald 9.3
Recommended Problems: McDonald 9.8 – 9.18
- Financial Engineering, Security Design, and Corporate Applications
Recommended Reading: McDonald 2.6, 15, 16
Recommended Problems: McDonald 15.1 – 15.23, 16.1 – 16.24

- Binomial Option Pricing Model:
 Recommended Reading: McDonald Chapter 10, 11, NotesonBinomialOptionPricing.pdf
 Recommended Problems: McDonald 10.1 – 10.23. 11.1 – 11.18
- Black, Merton, Scholes Formula(s) and Applications
 Recommended Reading: McDonald 12.1, 12.2, Black1989JPFM.pdf
 Recommended Problems: McDonald 12.1 – 12.10
 If somebody is interested in a more mathematical treatment:
 Chapter 18: The Lognormal Distribution
 Chapter 20: Brownian Motion and Ito's Lemma
 Chapter 21: Black-Scholes Equation
 Chapter 22: Risk-Neutral and Martingale Pricing
- Delta-Hedging and the Greeks
 Recommended Reading: McDonald 12.3, 13
 Recommended Problems: McDonald 12.11, 12.12. 13.1 – 13.20
- Leverage with Options
 Recommended Reading: McDonald 12.3, 12.4
 Recommended Problems: McDonald 12.13 – 12.17
- Additional topics as time permits:
 - Volatility
 Recommended Reading: McDonald 24
 - Credit Risk
 Recommended Reading: McDonald 27

You will find the the solutions to recommended problems from the textbook in the folder McDonaldSolutions.
