

**Financial Derivatives**  
**FNCE 206/717**  
**Summer 2009**  
**Date: June 7, 2009 (may be updated)**

**Time:** M-Th 4:20-5:55  
**Location:** SH-DH 211  
**Instructor:** Ronel Elul  
**Email:** [elul@wharton.upenn.edu](mailto:elul@wharton.upenn.edu)  
**Office:** TBA  
**Office Hours:** Most days after class  
**Telephone:** 215-574-3965  
**TA:** Michael Michaux ([michaux@wharton.upenn.edu](mailto:michaux@wharton.upenn.edu))

**Course Description:** This course is an introduction to the world of derivative securities, and in particular explores the interaction between an elegant mathematical theory and real-world application. Although the theory may appear fairly mathematical and abstract, it has proved to be one of the success stories of modern economics, providing surprisingly accurate predictions. We will develop a clear understanding of, and appreciation for, this theory, while at the same time demonstrating how it is applied in practice. Applications will be through cases, and we will also discuss how to use Bloomberg Machines to value derivatives.

**Prerequisites:** A first course in Finance (e.g. FNCE 100/601). Probability and Statistics. A reasonable background in Calculus.

**Readings:** The main text for the course is *Options, Futures and Other Derivatives*, by Hull (7th edition); this is the book favored by Wall Street practitioners. You should purchase this book, which comes together with the solutions manual. There are two bulk packs available from Wharton Reprographics – one has my notes (you should make sure to get this one before the first day of class) and the other has cases and readings. In addition, I also recommend *Infectious Greed* by Frank Partnoy, which is a lively account of derivatives in the 1990s and “The Black Swan” by Taleb.

**Grading:** Grading will be based on cases (30%), an in-class midterm on Thurs July 23 (30%) and an in-class final on Wednesday August 12 (40%).

## **Derivatives – Preliminary Topic List**

References are to *Options, Futures and Other Derivatives* by J. Hull (7th Edition)

Class starts at 5PM on August 4 (only)

Session 1 Introduction, Financial Innovation (Bernstein & Miller readings, Ch 1). Case groups.

Session 2 Futures & Options – Introduction (Ch2 except 2.3 and 2.9, 3.3, Ch 8 except 8.10)

Session 3 Interest Rates – Review (4.1-4.5). Valuing Futures and Forwards. (Ch 5)

Session 4 Swaps (7.1-7.7, but not pp. 161-3)

Session 5 Qualitative Properties of Option Prices (Ch 9)

Session 6 Option Strategies (Ch 10)

Session 7 Binomial Option Pricing (11.1-11.4, skim 19.1-19.4)

Session 8 Continued (11.5-11.9)

Session 9 Foundations of Binomial Option Pricing (Fed Fund Futures Articles)

Session 10 Brownian Motion and Stochastic Calculus (12.1-12.5)

Session 11 Midterm Review

**Midterm Exam: Thurs July 23** (in class) – covers through session 10

Session 12 Continued (12.6, 13.1-13.4)

Session 13 The Black-Scholes Model (13.5-13.6, 13.8-13.9, 13.11)

Session 14 Extensions (14.2, 14.5, 15.1-15.2, 15.4, skim 13.12); Hedging with Black-Scholes (17.1-17.2, 17.4-17.6, 17.8-17.10)

Session 15 Risk Neutral Valuation (13.7); Monte Carlo Valuation (19.6); Volatility Smiles (18.1-18.3, Simons article)

Session 16 Value at Risk (20.1-20.4, 20.6-20.8, Simons VaR article, Taleb book)

Session 17 Duration (4.8)

Session 18 Credit Risk in Corporate Debt. Credit Derivatives (22.1-22.5, 23.1-23.2, 23.7, 23.8)

Session 19 The Financial Crisis (Philadelphia Fed BR & other material)

Session 20 Continued

Session 21 Conclusion and Review

**Final Exam: Weds August 12** (in class) – comprehensive