Financial Derivatives
FNCE 206/717
Summer 2016
Date: May 29, 2016

Time: MW 4:30-8:20pm
Location: JMHH F70
Instructor: Ronel Elul
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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 briefly discuss how to use Bloomberg Machines to value derivatives.

Prerequisites: A first course in Finance (e.g. FNCE 100/611). Probability and Statistics (**essential**). A good background in Calculus (**essential**).

Readings: The main text for the course is Options, Futures and Other Derivatives, by Hull (9th edition); this is the book favored by Wall Street practitioners. You should purchase this book, which comes together with the solutions manual. There will two bulk packs on study.net (link through Canvas), or in print from Wharton Reprographics. One has the class slides (you should make sure to get this one before the first day of class) and the other has cases and readings.

Grading: Grading will be based on cases (30%), an in-class midterm on Wednesday July 20 (25%), and an in-class cumulative final on Wednesday August 3 (45%).

Derivatives –Topic List

Case due dates are preliminary and subject to change
References are to *Options, Futures and Other Derivatives* by J. Hull (9th ed)

7/6: Session 1: Introduction, Financial Innovation (Ch 1, Miller reading). Case groups.
Session 2: Futures & Options – Introduction (Ch2 except 2.10, 3.1-3.3, 3.6, Ch 10 except 10.10)
Session 3: Interest Rates – Review (4.1-4.6). Valuing Futures and Forwards. (Ch 5 except 5.13)

7/11: Session 4: Swaps (7.1-7.7, but not pp. 167-8, skim 7.11-7.12)
Session 5: Qualitative Properties of Option Prices (Ch 11)
Session 6: Option Strategies (Ch 12)
Southwest Case Due

7/13: Session 7: Binomial Option Pricing (13.1-13.4, skim 21.1-21.4);
Session 8: Continued (13.5-13.11)
Session 9: Foundations of Binomial Option Pricing. (Fed Fund Futures Articles)

7/18: Session 10: Introduction to Brownian Motion and Stochastic Calculus (14.1-14.4).
Midterm Review
PEPS Case Due

7/20: Midterm Exam (in class, covers through Session 9)
Session 12: Brownian Motion, Continued (14.6-14.7, 15.1-15.4)
Session 13: The Black-Scholes Model (15.5-15.6, 15.8-15.9, 15.11)

7/25: Session 14: Extensions to Black-Scholes (15.12, 17.1-17.4, 18.1-18.3, 18.7, skim 18.8);
Hedging with Black-Scholes (19.1-19.10, except 19.3 and 19.7)
Monte Carlo Simulation Due
Session 15: Risk Neutral Valuation and Black-Scholes (15.7);
Monte Carlo Valuation (21.6); Volatility Smiles (20.1-20.3, Simons model risk article)

7/27: Session 16: Value at Risk (22.1-22.4, 22.6-2128, Simons VaR article, Taleb book optional);
Session 17: Duration (4.8)
Session 18: Credit Risk in Corporate Debt. Credit Derivatives (24.1-24.6, 25.1-25.3, skim 25.8-25.9)
Wells Fargo Case Due

8/1: Conclusion and Review. *Orange County Case Due at Start of Class*
8/3: **Final Exam** (in-class, comprehensive)