

Statistics 441 (Winter 2009)
Syllabus (Tentative)

Monday, January 5	Introduction to Financial Derivatives	Ch. 1
Wednesday, January 7	Financial Option Valuation Preliminaries	Ch. 2
Friday, January 9	Introduction to MATLAB and Computer Simulation	Ch. 4
Monday, January 12	Normal and Lognormal Random Variables	Notes
Wednesday, January 14	Discrete-Time Martingales	Notes
Friday, January 16	Continuous-Time Martingales	Notes
Monday, January 19	Brownian Motion as a Model of a Fair Game	Notes
Wednesday, January 21	Riemann Integration	Notes
Friday, January 23	The Riemann Integral of Brownian Motion	Notes
Monday, January 26	Wiener Integration	Notes
Wednesday, January 28	Calculating Wiener Integrals	Notes
Friday, January 30	Further Properties of the Wiener Integral	Notes
Monday, February 2	Itô Integration (Part I)	Notes
Wednesday, February 4	Itô Integration (Part II)	Notes
Friday, February 6	Itô's Formula (Part I)	Notes
Monday, February 9	Itô's Formula (Part II)	Notes
Wednesday, February 11	Deriving the Black-Scholes Partial Differential Equation	Notes
Friday, February 13	Solving the Black-Scholes Partial Differential Equation	Notes
Monday, February 16	NO CLASS (UNIVERSITY HOLIDAY)	
Wednesday, February 18	NO CLASS (UNIVERSITY HOLIDAY)	
Friday, February 20	NO CLASS (UNIVERSITY HOLIDAY)	
Monday, February 23	More on the Black-Scholes Formulas	Ch. 11
Wednesday, February 25	The Greeks and More on Hedging	Ch. 9; Ch. 10
Friday, February 27	Risk Neutrality	Ch. 12
Monday, March 2	Solving a Nonlinear Equation	Ch. 13
Wednesday, March 4	Implied Volatility	Ch. 14
Friday, March 6	Monte Carlo Method	Ch. 15
Monday, March 9	Binomial Trees and Risk Neutral Pricing	Notes
Wednesday, March 11	Binomial Method	Ch. 16
Friday, March 13	Cash-or-Nothing Options	Ch. 17

Monday, March 16	American Options	Ch. 18
Wednesday, March 18	MIDTERM	
Friday, March 20	TBA	
Monday, March 23	Exotic Options	Ch. 19
Wednesday, March 25	Historical Volatility	Ch. 20
Friday, March 27	Variance Reduction by Antithetic Variates	Ch. 21
Monday, March 30	Variance Reduction by Control Variates	Ch. 22
Wednesday, April 1	Finite Difference Methods	Ch. 23
Friday, April 3	Finite Difference Methods for the Black-Scholes PDE	Ch. 24
Monday, April 6	Equilibrium Interest Rate Models (Part I)	Notes
Wednesday, April 8	Equilibrium Interest Rate Models (Part II)	Notes
Monday, April 20	FINAL EXAM (9:00 – 12:00)	