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Textbook and references
Hull J., *Options, Futures, and Other Derivatives,* 9th ed., Prentice Hall, 2014

Pre-requisites: Required, ISE 220 Probability Concepts in Engineering or equivalent.

Course Objectives: To familiarize students with investment problems and the mathematical tools needed to solve them. Investment problems such as assets pricing, portfolio selection and optimization, hedging, and optimization of financial strategies. In particular the use of derivative instruments to reduce investments risk. To attain this objective the knowledge of some mathematical tools is required. This course will familiarize the students with stochastic processes and stochastic calculus as they are useful to price derivative assets.

Session	Topic		Chapter (Hull)
Jun 29	Introduction. Volatility of daily returns.	lab	15.4, 23
July 06	Portfolio Optimization	lab	notes
July 11	Value at Risk	lab	22
July 13	Derivatives. Arbitrage. Forward contracts		1,5
July 18	The Binomial Model	lab	13
July 22	Black & Scholes formula	lab	15.8
July 25	**Midterm Exam**		
July 27	Brownian Motion. Exotic Options	lab	14,15
Aug 01	Options on indices, currencies, and dividend paying stocks.		17, 21
Aug 03	The Greeks. Portfolio Hedging	lab	19
Aug 08	**Final Exam**		

Grading Policy: homework assignments 30%, midterm exam 30%, final exam 40%.

Software: *R,* will be the main computational finance tool for portfolio optimization and simulation. Real data will be downloaded, manipulated and analyzed (analytically and graphically) using *R*. It is a powerful open source platform for statistical analysis.

Students with Disabilities. Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301and is open 8:30 a.m. – 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776

Desire2learn. Class notes are available at http://courses.uscden.net/. For general instructional support assistance please contact the Instructional Support Center office at denisc@usc.edu or (213) 821-1421. For any other technical support issue please contact the Technical Support Center at dentsc@usc.edu or (213) 821-1321.