

F 4:00 - 6:45 p.m., Room OHE 132
 Profesor : Cesar Acosta, Ph.D.
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Teaching Assistant: Yaoxiang Nie
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Textbooks - required

Bennett M., Hugen D., *Financial Analytics with R*, Cambridge, 2016
 Hull J., *Options, Futures, and Other Derivatives*, 10th ed., Prentice Hall, 2017

Pre-requisites: ISE 220 Probability Concepts in Engineering

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, using 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.

Week	Session		Chapter
1	Jan 12	Introduction.	B2
2	Jan 19	Volatility of daily returns lab	B3.7, H15.4
3	Jan 26	Derivatives. Arbitrage. Forward contracts	H5
4	Feb 02	European Options - The Binomial Model lab	H13
5	Feb 09	Black & Scholes formula lab	H21
6	Feb 16	Options on Currency, commodities, futures lab	B15
7	Feb 23	Implied Volatility lab	H17, H21
8	Mar 02	American Options lab	B15
9	Mar 9	Midterm Exam	4:00 p.m.
10	Mar 23	Brownian Motion, Monte Carlo simulation lab	B15
11	Mar 30	Stochastic Calculus lab	H14.6, H15.6
12	Apr 06	Exotic Options lab	H26
13	Apr 13	The Greeks	H19
14	Apr 20	Portfolio Hedging lab	H19
15	Apr 27	Portfolio Optimization, Value at Risk lab	H22
16	May 04	Final Exam	4:30-6:30 p.m.

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

Software: R, will be the main computational tool. Real data will be downloaded, manipulated and analyzed.

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.uscdcn.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.