

**16:958:535:01 Advanced Statistical Methods in Finance**  
**Spring 2014: Monday, 6:40-9:30 pm, Hill-009, Busch**

By CUN-HUI ZHANG

DEPARTMENT OF STATISTICS AND BIostatISTICS, RUTGERS UNIVERSITY

**Prerequisites:** FSRM 16:958:563 Regression Analysis in Finance

**Course Description:** Applications of statistical theory and methods, including regression, multivariate analysis, nonparametric estimation, time series, survival analysis, Brownian motion and stochastic calculus, to the following topics: returns and interest rates, portfolio theory, the capital asset pricing model, derivatives, properties of options, binomial trees, the Black-Scholes-Merton model, Greeks, implied volatility, value at risk, estimation of volatilities and correlations, copulas, credit risk, and more if time permits.

**TA:** Chengrui Li, tentative

**Office hours:** Monday 5:00-6:00 pm, 569 Hill Center

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**Text 1:** John C. Hull (2012). *Options, Futures, and Other Derivatives*, 8th. Ed. Prentice Hall, Boston. ISBN-10, 0132777428. ISBN-13, 978-0132777421.

**Text 2:** David Ruppert (2010). *Statistics and Data Analysis for Financial Engineering*. Springer, New York. ISBN-10, 1441977864. ISBN-13, 978-1441977861.

**Homework:** All homework assignments are due in one week unless otherwise announced. Late homework will not be accepted. DO NOT COPY from each other or from other sources.

**Final grade:** Homework assignments, 30%; Midterm Exam, 30% (March 10, tentative); Final Exam, 40% (6:40 pm, May 12, 2014)