Course: MSCS 6010 Probability, Fall 2011
Time: TuTh 6:30-7:45 Cudahy Hall 126
Instructor: Daniel B. Rowe, Ph.D.
Office Hours: TuTh 5:30 pm – 6:30 pm
Office: CU 313
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Grading: A midterm (in class) on Oct 20, weekly homework, and a final exam (in class) on Dec 13, 8:00 pm – 10:00 pm. Homework (30%), Mid-Term Exam (30%) and one Final (40%).

Matlab Introduction
- Arithmetic and Variables, Arrays and Indexing, Programming, Plotting, Functions and m-files, Importing and Exporting Images

Math Review
- Differentiation, integration

Events & Probability of events, Conditional Probability

Combinations and Permutations

Discrete Distributions
- properties, moments, expectation, transformation of variable, MGF
- Bernoulli, binomial, Poisson, hypergeometric

Continuous Distributions
- properties, expectation, moments, transformation of variable, MGF
- uniform, beta, normal, chi square, gamma, exponential, student t, F

Estimation & Hypothesis Testing
- Random samples, likelihood, MLE, LRT

Regression
- Simple linear, multiple linear

Multivariate Distributions
- normal, student t, Wishart, inverse Wishart

Bayesian Statistics
- Prior, likelihood, posterior, posterior estimation