Syllabus

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Syllabus
Fall 2013

**Course:** MSCS 6010 Probability
**Time:** TuTh 5:00-6:15 Cudahy Hall 126
**Instructor:** Daniel B. Rowe, Ph.D.
Office Hours: TuTh 4:00-5:00 pm
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Grading: A midterm (in class) on Oct 24, weekly homework & class participation, and a final exam (possibly in class) on Dec 10, 5:45 pm – 7:45 pm.
Homework & Participation (30%), Mid-Term (30%), Final (40%).
Matlab Introduction
- Arithmetic and Variables, Arrays and Indexing, Programming, Plotting, Functions and m-files, Importing and Exporting Images

Math Review
- Differentiation, Integration

Probability Theory
- Sets, Events, Probability of events, Combinations and Permutations, RVs, PMFs, PDFs, CDFs
Discrete Distributions
- properties, moments, expectation, MGF, transformation of variable
- Bernoulli, binomial, Poisson, hypergeometric

Continuous Distributions
- properties, expectation, moments, MGF, transformation of variable
- uniform, beta, normal, chi square, gamma, exponential, student t, F,
- random samples, likelihood, MLE, hypothesis testing, LRT
Multivariate Distributions
- normal, student t, Wishart, inverse Wishart

Bayesian Statistics
- prior, likelihood, posterior, posterior estimation

Numerical Flavor

All slides are a summary of the material and do not contain all detail. Book is ultimate authority.