Syllabus

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Course: MSCS 6010 Probability
Time: TuTh 4:30-5:45 Cudahy Hall 137
Instructor: Daniel B. Rowe, Ph.D.
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ISBN: 0-534-24312-6

Grading: A midterm (in class) on Oct 19, weekly homework, and a final exam (in class) on Dec 14, 3:30 pm – 5:30 pm. Homework (30%), Mid-Term (30%) and 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.