Department of Mathematics, Statistics, and Computer Science
Marquette University
Syllabus

Course: MSCS 6010 Probability, Fall 2012
Time: TuTh 5:00-6:15 Cudahy Hall 137
Instructor: Daniel B. Rowe, Ph.D.
Office Hours: TuTh 4:00 pm – 5:00 pm
Office: CU 313
E-mail: daniel.rowe@marquette.edu


Grading: A midterm (in class) on Oct 25, weekly homework, and a final exam (in class) on Dec 11, 5:45 pm – 7:45 pm. Homework (30%), Mid-Term Exam (30%) ,and a 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