

Department of Mathematics, Statistics, and Computer Science

Marquette University

Syllabus

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

E-mail: daniel.rowe@marquette.edu

Texts: (reference) Casella, G. & Berger, R.L. (2002). *Statistical Inference*, Second edition, Duxbury. ISBN: 0-534-24312-6

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