Stat 111: Probability and Statistics II

Swarthmore College, Spring 2015

Professor:	Phil Everson
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web page:	http://www.swarthmore.edu/NatSci/peverso1/stat111.htm
Office Hours:	Wednesday, Thursday afternoon and Friday, by appointment
Primary Text:	*Mathematical Statistics and Data Analysis*, by John A. Rice.
Other Texts:	Gelman et. al., *Bayesian Data Analysis*
	and Casella & Berger, *Statistical Inference.*

Course Description: Stat 111 is a continuation of Stat 61 and will review and embellish, in seminar format, much of the same material. Individual presenters may be asked to do additional readings from texts other than Rice. In particular, we will talk more about the Bayesian approach to statistical inference. We will also make use of the statistical program R, a free program available for download and available on the math-lab computers.

Tentative Schedule of Topics for first 9 weeks

week 1: Review of discrete probability

week 2: Review of continuous random variables and transformations

week 3: Conditional Mean and Variance, Covariance and Correlation

week 4: MGF, CLT and the t distribution

week 5: Likelihood, Sufficiency and Information

week 6: Maximum Likelihood Estimates and Fitting Distributions

week 7: Hypothesis tests: significance level and power

week 8: Midterm

week 9: Multiple Regression and Matrix Theory

In weeks 10-14 we will continue with linear regression theory and some more advanced topics. You are expected to attend and participate in all fourteen sessions. Each week, about half of the students will be assigned to give presentations and distribute class notes (ideally made using some form of tex). These students must arrange at least one meeting with me prior to the presentation - please come prepared. There will also be problems for everyone to turn in each week, an in class midterm on March 17, and a take-home final that you may work on for three days during the reading and finals period (times to be arranged with me).