SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS *(Tentative)*
MATH 414/514 *Mathematical Statistics II*

Objective: To learn how probability theory is used to design statistical methods. Emphasis will be on the design of methods. MINITAB will be used to implement and demonstrate various methods.

Intended for: Students in Mathematics.

Prerequisite: Mathematical Statistics I (MATH 413).

Text: "Probability and Statistical Inference," by DeGroot and Schervish; Addison Wesley, 3rd edition, 2002.

	Weeks
Review of Estimation	1.5
Sampling Distributions of Estimators	2.0

Chi-Square distribution, joint distribution of mean and variance, the t distribution, confidence intervals, unbiased estimators

Testing Hypotheses	3.5

Neyman-Pearson Lemma; best critical regions; power; sample size; Bayes test procedures, the F distribution, Likelihood Ratio Tests; applications selected from classical tests

Categorical Data and Nonparametric Methods	2.5

Chi-Square Tests, Simpson's Paradox, robust estimation, sign and rank tests

Overview of Linear Statistical Methods	1.5

Simple linear regression, Bayesian inference

Simulation	2.0

Simulating specific distributions, the bootstrap

Team Presentations	1.0
	14.0

EVALUATION

Boardwork	10%
Homework & Quizzes	15%
Tests	50%
Final Exam	25%

Graduate students will be assigned special homework/test problems or projects.

NOTE: Once a student has received credit, including transfer credit, for a course, credit may not be received for any course with material that is equivalent to it or is a prerequisite for it.

RMT/BAW/lsa 11/2006