SU DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
SYLLABUS *(Tentative)*
MATH 413/513 *Mathematical Statistics I*

Objectives: To learn how to construct and use probability models. In particular, to learn how probability models support the theory of statistical inference.

Intended for: Students in Mathematics or Physical Sciences.

Prerequisite: MATH 213, MATH 214 and MATH 310.

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

	Weeks
Introduction to Probability	1.5
Interpretations of probability, properties of probability; counting; multinomial coefficients	
Conditional Probability	1.5
Independence, Bayes Theorem	
Random Variables and Distributions	3.0
Discrete distributions, continuous distributions, bivariate distributions, conditional distributions, multivariate distributions, functions of random variables	
Expectation	3.0
Properties of expectations, mean, median, variance, moment-generating function, covariance, correlation and conditional expectation	
Special Distributions	2.5
Binomial, hypergeometric, Poisson, negative binomial, normal, gamma, beta distributions, multinomial and bivariate normal distributions	
Central Limit Theorem	1.0
Sketch of proof; applications	
Estimation	1.5
Tests	1.0
	14.0

EVALUATION

Boardwork/Homework	10%
Quizzes	15%
Tests	45%
Final Exam	30%

*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.

VXH/axr 3/2009