

NOTE: This document is published only as an indication of what is typically taught in this course. Instructors have the responsibility of deciding on topics to be omitted, additional topics to be included, and the emphasis, ordering, and pacing of presentation of topics.

SAMPLE SYLLABUS

Course Number: **MTH 411/511**

Course Title: **Probability Theory**

Credit Hours: **4.0**

Textbook(s): The Department offers instructors a choice between two texts:
Introductory Engineering Statistics (3rd ed) by Guttman, Wilks, and Hunter (Math Dept)
or
Fundamentals of Probability (2nd ed) by Saeed Ghahramani (Prentice Hall).

Prerequisite: MTH 142 (Calculus II).
Please note that functions of several variables are not treated in Calculus I or II.

Syllabus: For each of the two textbook choices, syllabus is given below.

If using Guttman et al text:

	[Chapter 2] Elements of Probability
	[Chapter 3] Some Important Discrete Distributions
	[Chapter 6] Probability Distributions

If using Ghahramani text:

4 weeks	[Chapter 1] sample spaces, events, axioms of probability, basic theorems. [Chapter 2] counting, permutations, combinations, etc. [Sections 3.1 - 3.5] conditional probability, multiplication law, Bayes theorem, independence.
4 weeks	[Chapter 4] random variables, distribution functions, discrete random variables, expectation, variance. [Chapter 5] special discrete random variables: Bernoulli, binomial, Poisson, geometric, negative binomial, hypergeometric. [Chapter 6] continuous random variables: density function, expectation, variance. [Sections 7.1-7.4] special continuous random variables: uniform, normal, exponential, gamma
4 weeks	[Sections 8.1 - 8.3] joint distribution for two random variables, independence, conditional distributions [Section 9.1] joint distribution for many random variables [Sections 10.1 - 10.3] expectation of sums of random variables, covariance, correlation. [Chapter 11] moment generating functions, sums of independent random variables, Chebyshev inequality, law of large numbers, central limit theorem.

This leaves 2 weeks for exams, extra material or a more leisurely pace. J. Dimock. March, 2005