

**Department of Electrical and Computer Engineering
University of Massachusetts, Amherst**

**ECE 314: Introduction to Probability and Random Processes
Spring 2009**

Course Website: Available on SPARK. You should log in regularly to check for new announcements

Instructors: **Prof. Hossein Pishro-Nik**
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Role: Lectures, exams.
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Prof. Dennis Goeckel
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Catalog Data:

Probability space, conditional probability, Bayes theorem. Combinatorial analysis. Random variables (r.v.'s), distribution and density functions. Expected value, moments, characteristic function. Function of r.v.'s, Multiple r.v.'s, conditional distributions, independent r.v.'s. Multivariate Gaussian r.v.'s. Parameter estimation, confidence intervals, hypothesis testing. Introduction to random processes: mean, autocorrelation, power spectral density. Prerequisite: E&C-ENG 313.

Prerequisites: Undergraduate courses in linear systems (such as ECE 313)

Textbook: Probability and stochastic processes by Roy D. Yates, and David J. Goodman. ISBN: 0-471-27214

Grades:

- Homework -10%
- Quizzes – 10%
- Midterm Exam 1- 25%
- Midterm Exam 2 – 25%
- Final Exam – 30%

Topics covered:

A. Probability

1. Experiments, Models, and Probabilities
2. Discrete Random Variables
3. Continuous Random Variables
4. Pairs of Random variables
5. Random Vectors
6. Sum of Random Variables

B. Statistics

1. Parameter Estimation
2. Hypothesis Testing
3. Estimation of Random Variables

C. Stochastic Processes

1. Introduction to stochastic processes