

EECS 140 ENGINEERING PROBABILITY

(Required for CpE and EE)

- Catalog Data:** **EECS 140 Engineering Probability (Credit Units: 4)** Sets and set operations; nature of probability, sample spaces, fields of events, probability measures; conditional probability, independence, random variables, distribution functions, density functions, conditional distributions and densities; moments, characteristic functions, random sequences, independent and Markov sequences. Prerequisite: Mathematics 2D. Formerly ECE186. (Design units: 0)
- Textbook:** Ross, Sheldon, *A First Course in Probability*, 7th edition, Prentice Hall, 2006.
- References:**
Leon-Garcia, Alberto. *Probability & Stochastic Processes for Electrical Engineering*, Addison-Wesley, 1994.
Yates, R. D. and Goodman, D. J., *Probability and Stochastic Processes*, John Wiley & Sons, 1999.
- Coordinator:** Athina Markopoulou
- Course Objectives:** Teach the fundamental theory of probability for engineers. Introduce useful random variables and their properties.
- Course Outcomes:** Students will:
Calculate the probability of different events.
Define random variables and work with some useful examples.
Calculate expectation and other properties of random variables.
Summarize data using simple statistics.
- Prerequisites By Topic:** Knowledge of basic set theory and associated logical operations, mathematical analysis including series, sequences, and convergence concepts, differential and integral calculus.
- Lecture Topics:** Combinatorial analysis
Axioms of probability
Conditional probability and independence
Discrete random variables
Continuous random variables
Jointly distributed random variables
Properties of expectation
- Class Schedule:** Meets for 3 hours of lecture and 1 hour of discussion each week for 10 weeks.
- Computer Usage:** Calculators or computers
- Laboratory Projects:**

Professional Component: Contributes toward the Computer Engineering Topics Courses and Electrical Engineering Topics Courses.

Relationship to Program Outcomes: This course relates to Program Outcomes a and k as stated at: <http://undergraduate.eng.uci.edu/degreeprograms/electrical/mission> and the Computer Engineering Program Outcomes a, b, l, m, and n as stated at: <http://undergraduate.eng.uci.edu/degreeprograms/computer/mission>

Design Content Description

Approach:

Lectures:

Laboratory Portion:

Grading Criteria:

Home work:	20%
Midterm exam:	35%
Final exam:	<u>45%</u>
	100%

Estimated ABET Category Content:

Mathematics and Basic Science: 0 credit units or 0%

Engineering Science: 4 credit units or 100%

Engineering Design: 0 credit units or 0%

Prepared by: Athina Markopoulou **Date:** July 2007

CEP Approved: Fall 2004