

COURSE: EECS 401. TITLE: Probabilistic Methods in Engineering. PREREQUISITE: EECS 216 or 306 or graduate standing		REQUIRED.
TEXTBOOK: R.Yates & D. Goodman, <i>Probability & Stochastic Processes: A Friendly Introduction for Electrical & Computer Engineers</i> , Wiley		
CATALOG DESCRIPTION: Basic concepts of probability theory. Random variables: discrete, continuous and conditional probability distributions; averages; independence. Statistical inference: hypothesis testing and estimation. Introduction to discrete & continuous random processes.		
COURSE OBJECTIVES: 1. To introduce students to the basic methodology of “probabilistic thinking” and to apply it to problems; 2. To teach students how to apply sums and integrals to compute probabilities, means, and expectations; 3. To teach students how to apply hypothesis testing and estimation to statistical engineering problems		TOPICS COVERED: 1. Axioms of probability 2. Probability density functions 3. Random variables & expectation 4. Hypothesis testing & estimation 5. Random sequences & processes 6. Mean and covariance functions
COURSE OUTCOMES [Program Outcomes Addressed] 1. Ability to compute simple probabilities using an appropriate sample space; [1,12] 2. Ability to compute simple probabilities and expectations from probability density functions; [1,12,13] 3. Ability to compute likelihood ratio tests from pdfs for statistical engineering problems [1,12,13] 4. Ability to compute least-square & maximum likelihood estimators for engineering problems [1,12-14] 5. Ability to compute mean and covariance functions for simple random processes [1,12,13,14]		ASSESSMENT (Course outcomes) 1. Weekly problem sets [1-5] 2. Short quizzes during class [1-5] 3. 1 midterm & 1 final exams [1-5]
PROGRAM OUTCOMES ADDRESSED: 1 PROFESSIONAL COMPONENT ADDRESSED: 12,13,14 PREPARED BY: Andrew E. Yagle on March 15, 2006	CLASS/LAB SCHEDULE: LECTURES: 3 per week @ 50 minutes. RECITATION: 1 per week @ 50 minutes	

COURSE DESCRIPTION: University of Michigan, College of Engineering, ELECTRICAL ENGINEERING PROGRAM