

ISE 220 PROBABILITY CONCEPTS IN ENGINEERING – Spring 2016

TTh, 8:00 – 9:50 a.m., Room KAP 148

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Textbook: Probability and Statistics with Reliability, Queueing, and Computer Science Apps., 2nd ed., Wiley

Pre-requisites: MATH 126 Calculus II (MATH 226 recommended)

Course Objectives: This is an introductory course to the fundamental concepts of probability (sample space, probability of events, conditional probabilities, random variables, expected values, variances, common random variables). No previous background of probability and statistics is required. This calculus-based course covers the fundamental concepts showing how to apply these concepts to engineering problems..

Course Outline

Week	Topic	Book	Exam
1	Sample space, Events, Sets, Probability of events	Secs. 1.3 – 1.6	
2	Axioms of probability, Probability of equally likely events	Secs. 1.7 – 1.8	
3	Conditional probability, Law of total probability (LTP)	Sec. 1.9	
4	Independent events, Bayes rule, applications	Secs. 1.10 – 1.11	
5	Midterm 1		Feb 11
6	Random Variables, PMF, CDF of discrete random variables	Secs. 2.1 – 2.4	
7	Discrete Binomial, Geometric and Poisson random variables	Sec. 2.5	
8	Expected Value and Variance	Sec. 4.5	
9	Continuous random variables, PDF, CDF, expectation, variance	Secs. 3.1, 4.1	
10	Uniform, Normal, Exponential and Gamma variables	Secs. 3.4.6, 3.4.7, 3.2	
11	Midterm 2		Mar 29
12	Jointly distributed (multivariate) random variables	Secs. 2.8, 3.6,	
13	Marginal and conditional distributions	Sec. 5.1	
14	Covariance, independence and sums of random variables	Secs. 2.9, 3.9	
15	Central limit theorem (CLT), Normal approximation to Binomial	Sec. 4.7, Ex. 3.7	
	Final Exam		May 11

Grading Policy:

Quizzes 24%

Midterms 24%

Final Exam 28%

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Students with Disabilities. Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776