EE 464: Probability Theory for Engineers
Spring 2003

Lecture: MW 5:00-6:20 p.m. in Studio D
Discussion: F 12-12:50 p.m. in Studio D

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Text: Required: Probability and Random Processes for Electrical Engineering, 2nd edition
Author: Alberto Leon-Garcia

Course Grading Policy:

Method	Date	Weight
Exam 1	Wednesday, Feb. 19	20%
Exam 2	Monday, Mar. 10	20%
Exam 3	Wednesday, April 23	20%
Final	Wednesday, May 7, 4:30-6:30 p.m.	40%

All exams are from 5:00-6:20 p.m. except for the final which is given at the time shown in the above table.

Each exam (including the final) will have its own grading scale and the overall grading scale will be a combination of these with the weights of each scale assigned according to the above table. For example, if an A- on Exam 1 is 79, on Exam 2 is 84, on Exam 3 is 78 and on the Final is 82, then an A- for the course would be

$$79\times 0.2 + 84\times 0.2 + 78\times 0.2 + 82\times 0.4 = 81.$$

All exams are closed book and closed notes. Any formulas, theorems, etc., that you do not need to memorize will be provided to you on the exams. Calculators are allowed on exams.

Homeworks will be assigned and graded and satisfactory completion of the homework can increase your overall average by a couple of points.

EE 464 Outline

Spring 2003

Inst: C.W. Walker

Section	Title	Text
1.0	Introduction	1
2.0	Set Operations and Notation	2.1
3.0	Probability Measure	2.1
3.1	Sample Space and Events	2.1, 2.2
3.2	Probability Space	2.2
4.0	Combinatorics	2.3
5.0	Conditional Probability	2.4
5.1	Definition	2.4
5.2	Properties of Conditional Probability	2.4
6.0	Independence of Events	2.5
7.0	Combined Experiments	2.5
8.0	Random Variables	3
8.1	Definitions and Comments	3.1
8.2	Distribution Functions	3.2
8.3	Discrete and Continuous Random Variables	3.2
8.4	Density Functions	3.3
8.4.1	Definitions	3.3
8.5	Examples of Random Variables	3.4
8.6	Conditional Distribution and Density Functions	3.3
8.6.1	Definitions and Derivations	3.3
8.6.2	Total Probability and Bayes' Theorem	2.4
9.0	Functions of One Random Variable	3.5
9.1	Finding the Distribution of g(X)	3.5
9.1.1	Discrete Case	3.5
9.1.2	Continuous Case	3.5
9.2	Expectations	3.6
9.2.1	Discrete Case	3.6
9.2.2	Continuous Case	3.6
9.3	Variance	3.6
9.3.1	Discrete Case	3.6
9.3.2	Continuous Case	3.6

Section	Title	Text
9.4	Examples and Additional Results	3.7
9.5	Moments	3.9
9.6	Moment Generating Function	3.9
9.6.1	Examples	3.9
9.7	Characteristic Functions	3.9
9.8	Special Moment Functions	3.9
9.9	Applications of Characteristic Functions	3.9
10.0	Two Random Variables	4.2
10.1	Joint Distribution and Density	4.2
10.2	Independence	4.3
10.3	One Function of Two Random Variables	4.6
10.4	Two Functions of Two Random Variables	4.6
11.0	Moments and Conditional Distributions	4.4, 4.7
11.1	Joint Moments	4.7
11.2	Joint Characteristic Functions	4.7
11.3	Conditional Distributions	4.4
11.4	Conditional Expected Values	4.4
11.5	Mean Square Estimation	4.9
12.0	Sequences of Random Variables	4, 4.1, 4.5
12.1	Introduction	4.5
12.2	Transformations of a Random Vector	4.6
12.3	Independence	4.5
12.4	Order Statistics	
12.5	Mean and Covariance	4.7
12.6	Conditional Densities	4.4
12.7	Characteristic Functions	4.7
12.8	Jointly Gaussian Random Variables	4.8
12.9	Central Limit Theorem	5
12.10	Random Numbers	2.7
12.11	Mean Square Estimation	4.9
13.0	Introduction to Random Processes (Stochastic Convergence)	6

The above outline is tentative and may change if circumstances warrant.