

**King Fahd University of Petroleum and Minerals**  
**Department of Electrical Engineering**  
**EE-315-Probabilistic Methods in Electrical Engineering**  
**SECOND SEMESTER 2003-2004**

Week	Topics	Sections
1	<b>Introduction</b> Examples of probability models from electrical engineering	Chapter 1
2	<b>Basic Concepts of Probability Theory</b> Random experiments Axioms of probability Conditional probability	2.1 2.2 2.4
3	Independence of events Sequential experiments	2.5 2.6 (up to p. 64)
4	<b>Random Variables</b> Notion of r.v. Cumulative Distribution Function (cdf)	3.1 3.2
5	Probability Density Function (pdf) Some Important r. v. 's	3.3 3.4
6	Functions of a r. v. Expected value of a r. v. Transform methods (charac. function)	3.5 3.6 3.9 (up to p. 147)
7	<b>Multiple random variables</b> Pairs of r.v. Independence of two r.v.	4.2 4.3
8	Conditional probability Multiple r. v. Functions of several r.v.	4.4 4.5 4.6 (up to p. 223)
9	Expected value of functions of r. v. Jointly Gaussian r. v. Sum of r. v. Central Limit Theorem.	4.7 (up to p. 235) 4.8 (up to p. 240) 5.1 (up to p. 271) 5.3 (up to p. 285)
10	<b>Random Processes</b> Definition of a r.p., Specifying a r. p.,	6.1 6.2
11	Examples of Discrete r. p. Examples of Continuous r. p.	6.3 6.4
12	Stationary r. p. Time averages	6.5 (up to p. 362) 6.7
13	<b>Analysis &amp; Processing of Ran. Signals</b> Power Spectral Density	7.1 (up to p. 410)
14	Response of linear systems to ran. Signals	7.2
15	R E V I E W	

**PREREQUISITE: EE 207**

**GRADING POLICY:**

EXAM I: 20% EXAM II: 20% FINAL EXAM: 40% PROJECT: 5% CLASS WORK: 15%

**MAJOR EXAMS:**

First major Exam on Saturday, March 27 ( 8-10 PM).

Second major Exam on Saturday, May 1(8-10 PM).

**INSTRUCTOR:**

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**Office Hours: Sun (12:00-1:00 pm & 2:00 – 3:00pm) & Tue (11:30-12:30 pm)**

**TEXT BOOK:**

Leon-Garcia, A. "*Probability and Random Processes for EE*", Addison Wesley, 2<sup>nd</sup> Edition, 1994.

**REFERENCES:**

Peebles, "Probability, Random Variables, and Random Principles, 4/e, McGraw Hill, 2000

Ross, S. . "A First Course in *Probability*", Prentice Hall, Fifth Edition, 1998.

Helstrom, C.W. "*Probability and Stochastic Processes for Engineers*", Addison-Wesley, 2<sup>nd</sup> Edition, 1992.

Walpole, R.E., Myers, R.H. and Myers, S. L., "*Probability and Statistics for Engineers and Scientists*", Prentice Hall, Sixth Edition, 1998.