King Fahd University of Petroleum and Minerals
Department of Electrical Engineering
EE-315-Probabilistic Methods in Electrical Engineering
SECOND SEMESTER 2007-2008 (071)

Week	Topics	Sections	Homework
1	**Probability** Set definitions and set operations Axioms of probability	 1.1-1.2 1.3	
2	Joint and conditional probability Independent events Combined experiments	1.4 1.5 1.6	
3	Bernoulli trials **Random Variables** The random variable (r.v.) concept CDF	1.7 2.1 2.2	
4	PDF Some Important r. v.'s	2.3 2.4	
5	Some Important r. v.'s Conditional distribution and density functions	2.5 2.6	
6	Expectation Moments	3.1 3.2	
7	Characteristic function Transformations of a r.v.	3.3 3.4	
8	**Multiple random variables** Pairs of r.v.'s Properties of joint distribution and joint density	4.1 4.2-4.3	
9	Conditional distribution and density Statistical Independence Distribution and density of a sum of r.v.'s Central Limit Theorem	4.4 4.5 4.6 4.7	
10	Expected value of a function of r. v.'s Joint characteristic functions Jointly Gaussian r. v.'s	5.1 5.2 5.3 (Only 2 r.v.'s)	
11	Transformations of multiple r.v.'s Sampling and some limit theorems **Random Processes –Temporal Characteristics** Concept of a random process Stationarity and independence	5.4 5.7 6.1 6.2	
12	Correlation functions and their properties Gaussian random process Poisson random process	6.3-6.4 6.5 6.6 (Up to (6.6-4))	
13	**Random Processes – Spectral Characteristic** Power Spectral Density and its properties Relationship between PSD and autocorrelation function	7.1 (Up to (7.1-21)) 7.2	
14	**Linear systems with random inputs** Random signal response of linear systems Spectral characteristics of system response	8.2-8.4	
15	**REVIEW**		

PREREQUISITE: EE 207

GRADING POLICY:
CLASS WORK: 25% EXAM I (November 6, 6:30-8 pm): 15% EXAM II (December 3, 6:30-8 pm): 25% FINAL EXAM: 35%

TEXT BOOK:
Peebles, P. Z. "*Probability, Random Variables, and Random Signal Principles*", McGraw-Hill, 4th Edition, 2001.

REFERENCES:
Leon-Garcia, A. "*Probability and Random Processes for EE*", Addison Wesley, 2nd Edition, 1994.
Ross, S. . "A First Course in *Probability*", Prentice Hall, Fifth Edition, 1998.
Helstrom, C.W. "*Probability and Stochastic Processes for Engineers*", Addison-Wesley, 2nd Edition, 1992.
Walpole, R.E., Myers, R.H. and Myers, S. L., "*Probability and Statistics for Engineers and Scientists*", Prentice Hall, Sixth Edition, 1998.

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