King Fahd University of Petroleum and Minerals
Department of Electrical Engineering

EE-315-Probabilistic Methods in Electrical Engineering

First semester 2009-2010 (091)

(Tentative)

Week	Topics	Sections	Notes
1 (Oct. 03 – 07)	**Probability** Set definitions and set operations Axioms of probability	 1.1-1.2 1.3	
2 (Oct. 10 – 14)	Joint and conditional probability Independent events Combined experiments	1.4 1.5 1.6	HW-1
3 (Oct. 17 – 21)	Bernoulli trials **Random Variables** The random variable (r.v.) concept CDF	1.7 2.1 2.2	 Quiz-1 HW-2
4 (Oct. 24 – 28)	PDF Some Important r. v.'s	2.3 2.4	Quiz-2 HW-3
5 (Oct. 31–Nov. 4)	Some Important r. v.'s Conditional distribution and density functions	2.5 2.6	HW-4
6 (Nov. 07 – 11)	Expectation Moments	3.1 3.2	
7 (Nov. 14 – 18)	Characteristic function Transformations of a r.v.	3.3 3.4	First major Quiz-3 HW-5 Eid break starts
8 (Dec. 05 – 09)	**Multiple random variables** Pairs of r.v.'s Properties of joint distribution and joint density	4.1 4.2-4.3	Classes resume Quiz-4 HW-6
9 (Dec. 12 – 16)	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 (Dec. 19 – 23)	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)	HW-7
11 (Dec. 26 – 30)	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	Quiz-5 HW-8
12 (Jan. 02 – 06)	Correlation functions and their properties Gaussian random process Poisson random process	6.3-6.4 6.5 6.6 (Up to (6.6-4))	HW-9 Second major
13 (Jan 09 – 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	Quiz-6
14 (Jan. 16 – 20)	**Linear systems with random inputs** Random signal response of linear systems Spectral characteristics of system response	8.2-8.4	HW-10
15 (Jan 23 – 27)	**REVIEW**		Quiz-7

GRADING POLICY:

Assignments	Quizzes	Attendance	Project	Major-1	Major-2	Final
7	15	3	5	20	20	30

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.

PREREQUISITE: EE 207

INSTRUCTOR:
Dr. Ahmad A. Masoud Office: 1080 Tel:3740 e-mail: masoud@kfupm.edu.sa Off. Hrs.: UT 12:15 – 1:15

Imporatant dates:

First major exam: Saturday, November 14, 2009 from 7PM – 9PM

Second major exam: Wednesday, January 6, 2010 from 7PM-9PM

Eid break starts: November 19, 2009
Eid break ends: December 4, 2009