SREE VIDYANIKETHAN ENGINEERING COLLEGE

(Autonomous)

Sree Sainath Nagar, A. Rangampet-517 102

Department of Electronics and communication Engineering

Lesson Plan

Name of the Subject : PROBABILITY AND STOCHASTIC PROCESSES (14BT30401)
Class & Semester : II B. Tech (ECE) – I Semester
Name of the faculty Member: RAVISEKHAR.T

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
UNIT – I: PROBABILITY				
1.	Probability introduced through Sets and Relative Frequency	1	T1	Set theory
2.	Experiments and Sample Spaces, Discrete and Continuous Sample Spaces, Events.	1	T1	
3.	Probability Definitions and Axioms, Mathematical Model of Experiments, Probability as a Relative Frequency	2	T1	
4.	Joint Probability, Conditional Probability, Total Probability	1	T1	
5.	Bayes' Theorem	1	T1	
6.	Independent Events	1	T1	
Total periods required:		**7**		
UNIT – II: THE RANDOM VARIABLE				
7.	Random Variable Concept	1	T1	kurtosis
8.	Distribution Function, Density Function, Properties	1	T1	
9.	The Gaussian Random Variable	1	T1	
10.	Other distribution and density examples	1	T1	
11.	conditional distribution , Methods of defining Conditioning Event	2	T1	
12.	Conditional Density, Properties	1	T1	
13.	Expectation, Moments	1	T1	
14.	Functions that give moments-Characteristic Function	1	T1	
15.	Moment Generating Function	1	T1	
16.	Transformations of a random Variable	2	T1	
Total periods required:		**12**		
UNIT -III: MULTIPLE RANDOM VARIABLES				
17.	Vector Random Variables, Joint Distribution and density functions, Properties.	1	T1	iid random variables
18.	Marginal Distribution Functions Conditional Distribution and Density	1	T1	
19.	Statistical Independence	1	T1	
20.	Distribution and density of a sum of random variables	1	T1	
21.	Central Limit Theorem	1	T1	
22.	Expected Value of a Function of Random Variables- Joint Moments about the Origin, Joint Central Moments	1	T1	
23.	Joint Characteristic Functions	1	T1	
24.	Jointly Gaussian Random Variables,	1	T1	
25.	Transformations of Multiple Random Variables	1	T1	

S. No.	Topic	No. of periods	Book(s) followed	Topics for self study
26.	Linear Transformations of Gaussian Random Variables	1	T1	
	Total periods required:	**10**		
UNIT – IV: STOCHASTIC PROCESSES – TEMPORAL CHARACTERISTICS				
27.	Concept of Stochastic process	1	T1	Markov processes
28.	Stationary and Statistical Independence,	1	T1	
29.	Time Averages and Ergodicity	1	T1	
30.	Mean-Ergodic Processes, Correlation-Ergodic Processes	2	T1	
31.	Auto correlation function and its properties	1	T1	
32.	Cross correlation function and its properties	1	T1	
33.	Covariance Functions	1	T1	
34.	Gaussian Random Processes	1	T1	
35.	Poisson Random Process	1	T1	
	Total periods required:	**10**		
UNIT – V: STOCHASTIC PROCESSES – SPECTRAL CHARACTERISTICS				
36.	Noise classification: uncorrelated noise-external nose: atmospheric noise, extra terrestrial nose, manmade noise.	1	T2	Noise in semiconductor devices
37.	Internal noise: shot noise, transit-time nose, thermal noise, noise power.	1	T2	
38.	Noise voltage	1	T2	
39.	Correlated noise, impulse noise interference	1	T2	
40.	Signal-to-noise power ratio	1	T2	
41.	Noise factor and Noise Figure equivalent noise temperature	1	T2	
	Total periods required:	**6**		
	Grand total periods required:	**45**		

TEXT BOOKS:

T1. Peyton Z. Peebles, *Probability, Random Variables & Random Signal Principles,* TMH, 4th Edition, 2002.

T2:Wayne Tomasi ,*Electronic communications systems* ,Pearson Education, 5th Edition, 2004

REFERENCE BOOKS:

R1. Athanasios Papoulis and S. Unnikrishna Pillai, Probability, Random Variables and Stochastic Processes, PHI, 4th Edition, 2002.

R2. Henry Stark and John W. Woods, Probability and Random Processes with Application to Signal Processing, Pearson Education, 3rd Edition, 2002.