

Course Number and Name												
BMA504 - RANDOM PROCESS												
Credits and Contact Hours												
4 and 75												
Course Coordinator's Name												
Mr KrishnaKumar												
Text Books and References												
Text Books:												
1. S.C.Gupta & V.K.Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand and Sons, New Delhi , 2003.												
2. O Flynn M., " Probability, Random Variables and Random Processes", Harperand RowPublishers, New York, (1982).												
References:												
1. Peebles Jr., "Probability, Random Variables and Random Signal Principles", McGraw Hill Publishers, (1987).												
2. Ochi M.K., "Applied Probability and Stochastic Processes ", Wiley India Pvt Ltd, New Delhi.												
3. Douglas C.Montgomery, George C.Runger, and Norma F.Hubele. "Engineering Statistics" 4 th Edn. Wiley India Pvt Ltd., New Delhi. 2007.												
4. Ronald E.Walpole. "Probability and Statistics for Engineers and Scientists". 9 th Edn. 2014.												
5. Pearson Education, Chennai-600113												
6. www.math.chalmers.se/Stat/.../CTH/.../091												
Course Description												
<ul style="list-style-type: none"> To impart adequate knowledge about probability concepts To make students understand Moment Generating Functions 												
Prerequisites						Co-requisites						
Mathematics II						Nil						
required, elective, or selected elective (as per Table 5-1)												
required												
Course Outcomes (COs)												
CO1 After completing this course students would be able to apply concepts of Probability to solve problems in Electronic Engineering.												
CO2 Find functional relationship between random inputs and outputs with the use of Random Process Techniques												
CO3 Find the linearity in Birth and Death Processes with the use of Poisson processes.												
CO4 To make students understand Discrete and Continuous Random variables, Random Processes and their applications in Electronic Transmissions												
CO5 To Understand about the correlation Functions												
CO6 Find the trend information from discrete data set through numerical differentiation and summary information through random process												
Student Outcomes (SOs) from Criterion 3 covered by this Course												
	COs/SOs	a	b	c	d	e	f	g	h	i	j	k
	CO1	H					M	M	H	H		H
	CO2	H	M	H								
	CO3	H			H	M	M				L	
	CO4	H		M		H		M	L			M
	CO5	H	M		M			H		M		
	CO6	H	M			M	H			M	M	

List of Topics Covered**UNIT I PROBABILITY AND RANDOM VARIABLES****9+6**

Probability concepts, Bayes' theorem, Random variables. Moments, Moment Generating function, Binomial, Poisson, Geometric, Exponential, and Normal distributions. Univariate Transformation of random variable.

UNIT II TWO-DIMENSIONAL RANDOM VARIABLES**9+6**

Marginal and conditional distributions, Covariance, Correlation and regression, Transformation of random variables, Central limit theorem-Lindberg and Liapounouff Theorems (applications).

UNIT III RANDOM PROCESSES**9+6**

Classification, Stationary and Markov processes, Binomial process, Poisson process, Sine-wave process, Ergodic processes.

UNIT IV CORRELATION FUNCTION**9+6**

Auto correlation for discrete and continuous processes, Cross correlation functions, Correlation integrals.

UNIT V SPECTRAL DENSITIES**9+6**

Power spectral density, Cross spectral density, Applications to linear systems with random inputs