

22CAA01- PROBABILITY AND STATISTICS FOR COMPUTER SCIENCE					
		L	T	P	C
		3	0	0	3
PREREQUISITE : NIL					
Course Objective:		<ul style="list-style-type: none"> To understand the mathematical concept of probability and random variable in various distributions. To understand the concepts of testing the hypothesis of large and small samples and experiment of design. 			
Course Outcomes The Student will be able to		Cognitive Level	Weightage of COs in End Semester Examination		
CO1	Apply probability axioms and the moments of discrete and continuous random variables to core engineering problems.	Ap	20%		
CO2	Solve the concepts of discrete probability distributions including requirements of mean and variance for decision making in algorithms.	Ap	20%		
CO3	Determine the correlation and linear regression with respect to random variables in data science.	An	20%		
CO4	Analyze large and small sample tests to perform non-parametric tests and design of experiment.	An	20%		
CO5	Interpret the logical concepts in engineering design using effective mathematical tool.	Ap	20%		

UNIT I - PROBABILITY AND RANDOM VARIABLES	(9)
Probability – Axioms of probability – Conditional probability – Baye’s theorem - Random variables - Probability function – Moments – Moment generating functions and their properties.	
UNIT II - STANDARD DISTRIBUTIONS	(9)
Discrete Distributions: Binomial, Poisson and Geometric. Continuous Distribution: Uniform and Normal Distributions.	
UNIT III - TWO DIMENSIONAL RANDOM VARIABLES	(9)
Joint Distributions - Marginal and Conditional Distributions – Covariance - Correlation and Regression.	
UNIT IV - TESTING OF HYPOTHESIS	(9)
Sampling Distributions -Testing of Hypothesis for Mean, Variance. t - Distribution, F – Distribution - Chi-Square Test for Independence of Attributes and Goodness of fit.	
UNIT V - DESIGN OF EXPERIMENTS	(9)
Analysis of Variance- Completely Randomized Design - Randomized Block Design - Latin Square Design.	
TOTAL (L:45) : 45 PERIODS	

REFERENCES:

1. Veerarajan T, "Probability and Statistics, Random Processes and Queuing Theory and Queuing Networks", 4th Edition, Tata McGraw-Hill, New Delhi 2018.
2. S. C. Gupta and V. K. Kapoor, "Fundamentals of Mathematical Statistics", Sultan Chand & Sons, New Delhi, 2020.
3. Allen, O. Arnold, "Probability, Statistics and Queuing Theory with Computer Applications", 2nd ed., Elsevier, New Delhi, 1990.
4. Taha, H.A., "Operations Research - An Introduction", Pearson Education, New Delhi, 2017.
5. Trivedi, S. K, "Probability and Statistics with Reliability, Queuing and Computer Science Applications", John Wiley & Sons, New Delhi, 2008.

Mapping of COs with POs / PSOs

Cos	POs												PSOs	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2
1	3													
2	3													
3		2												
4		2												
5	3				2				3			2		
CO	3	2			2				3			2		

