

PROFORMA FOR MODIFIED COURSE

1.	Title of the Course	Probability and Statistics
2.	Course Number	MA2023
3.	Status of the Course	Elective
4.	Structure of Credits	3-0-0-3
5.	Offered To	UG
6.	New Course/Modification to	Modification To MA2023
7.	To be Offered by	Department of Mathematics
8.	To take effect from	July 2019
9.	Prerequisite	Nil
10.	Whether approved by the Program	Yes
11.	Course Objective: To introduce the fundamentals of probability theory and the basic techniques of statistics. To demonstrate methods to solve applied problems of probability and applications of statistics.	
12.	Course Content: Probability: Probability models and axioms, conditioning and Bayes' rule, independence discrete random variables; probability mass functions; expectations, examples, multiple discrete random variables: joint PMFs, expectations, conditioning, independence, continuous random variables, probability density functions, expectations, examples, multiple continuous random variables, transformation of random variables, covariance and correlation, iterated expectations, convolution; notion of convergence, weak law of large numbers, central limit theorem. Statistics: Concepts of Statistical Inference, Point Estimation, Methods of Estimation, Confidence Intervals, Testing of Hypotheses, Bayesian Statistical Inference.	
13.	Text book(s): 1. Bertsekas D and Tsitsiklis J, <i>Introduction to Probability</i> , Athena Scientific (2008)	
14.	Reference(s): 1. Chung K L, <i>Elementary Probability Theory with Stochastic Process</i> , Springer Verlag (1974) 2. Drake A, <i>Fundamentals of Applied Probability Theory</i> , McGraw-Hill (1967) 3. Kreyszig E, <i>Advanced Engineering Mathematics</i> , John Wiley & Sons (2010) 4. Ross S, <i>A First course in Probability</i> , Prentice Hall of India (2009)	