



B. Sc. Statistics (Faculty of Science)
Third year Semester (VI)

Course Code	US06MISTA01	Title of the Course	PROBABILITY DISTRIBUTIONS
Total Credits of the Course	02	Hours per Week	02

Course Objectives:	1. Introduce Probability Distributions: To provide a fundamental understanding of probability distributions and their role in modeling random phenomena. 2. Understand Discrete Distributions: To introduce students to discrete probability distributions such as Binomial, Poisson, and Geometric distributions, and their applications. 3. Understand Continuous Distributions: To familiarize students with continuous probability distributions like Normal, Exponential, and Uniform distributions, and their significance in real-life scenarios. 4. Calculate Measures of Distribution: To enable students to compute and interpret measures such as mean, variance, and standard deviation for different probability distributions. 5. Model Real-World Problems: To develop the ability to model and solve real-world problems using appropriate probability distributions.
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Course Content		
Unit	Description	Weightage* (%)
I	Discrete probability distributions: Bernoulli distribution, Binomial distribution, Poisson distribution, Geometric distribution, Negative binomial distribution, Hyper geometric distribution, Discrete uniform distribution, Mean variance, m.g.f, p.g.f and c.g.f. and its applications	50%
II	Continuous probability distributions: Continuous uniform distribution, Normal distribution, mean variance, m.g.f, p.g.f and c.g.f. and its applications, Exponential distribution, Gamma distribution, Beta distribution of first and second kind, Mean variance, m.g.f, p.g.f and c.g.f. and its applications	50%





Teaching-Learning Methodology	Interactive Class Lectures, ICT Tools, hand on experience in problem solving through practical sessions.
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Evaluation Pattern		
Sr. No.	Details of the Evaluation	Weightage
1.	Internal Written / Practical Examination (As per CBCS R.6.8.3)	15%
2.	Internal Continuous Assessment in the form of Practical, Viva-voce, Quizzes, Attendance (As per CBCS R.6.8.3)	15%
3.	University Examination	70%

Course Outcomes: Having completed this course, the learner will be able to	
1.	Analyse Discrete Probability Distributions: Apply and interpret discrete probability distributions such as Binomial, Poisson, Geometric, and Hypergeometric distributions in real-life scenarios.
2.	Analyse Continuous Probability Distributions: Understand and apply continuous probability distributions such as Normal, Exponential, and Uniform distributions to solve practical problems.
3.	Calculate Mean, Variance, and Higher Moments: Compute the expected value, variance, standard deviation, and higher moments of various probability distributions.

Suggested Text Books/ References:	
Sr. No.	Text Books
1.	Gupta S.C. and Kapoor V.K.: Fundamentals of Mathematical Statistics
2.	Mood A.M. and Graybill F.A. and Boes D.C.E.: Introduction to theory of statistics
3.	Hogg and Craig: Introduction to Mathematical Statistics
4.	Biswas Purna Chandra: Probability & Statistics (PHI Edition)





B. Sc. Statistics (Faculty of Science)
Third Year Semester (VI)

Course Code	US06MISTA02	Title of the Course	STATISTICS PRACTICAL
Total Credits of the Course	02	Hours per Week	04

Course Objectives:	1. Teach Data Fitting Techniques: To equip students with the ability to fit theoretical probability distributions to real-world data using statistical methods. 2. Enhance Practical Application Skills: To enable students to apply knowledge of probability theory in fitting and analyzing distributions using experimental or collected data. 3. Develop Computational Skills: To provide hands-on experience in computing parameters (mean, variance, standard deviation) and fitting probability distributions manually and using statistical software. 4. Interpret Goodness of Fit: To teach students how to measure the goodness of fit of a distribution to given data using methods like the Chi-square test
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Course Content	
Sr. No	List of Practicals
1	Fitting of Binomial distribution
2	Fitting of Poisson distribution
3	Fitting of Geometric distribution
4	Fitting of Negative Binomial distribution
5	Fitting of Discrete uniform distribution
6	Fitting of Normal distribution
7	Fitting of an Exponential distribution

