



Program	MASTER OF SCIENCE (INFORMATION TECHNOLOGY) - INTEGRATED (IMSc-IT)	Semester - 4
Type of Course	Multidisciplinary	
Prerequisite	Introductory Knowledge of Probability and statistics.	
Rationale	The study of curve fitting, Approximation of errors, Roots of Equations, Interpolation, Numerical Integration, Numerical Differentiation, Ordinary differential equations, Systems of linear equations, Iterative methods.	
Effective From A.Y.	2025-26	

Teaching Scheme (Contact Hours)				Examination Scheme				
Lecture	Tutorial	Lab	Credit	Theory Marks		Practical Marks		Total Marks
				SEE	IAT	SEE	CCE	
3	0	0	3	70	30	-	-	100

SEE - Semester End Examination, IAT - Internal Assessment Test, CCE - Continues & Comprehensive Evaluation

Course Content		T - Teaching Hours W - Weightage	
Sr.	Topics	T	W
1	Probability: Experiment, definition of probability, Conditional probability, Independent events, Total probability, Bayes' theorem.	5	10
2	Random Variables: Random variables, Discrete random variable, Probability mass function, Continuous random variable, Probability density function, Cumulative distribution function, Properties of cumulative distribution function, Mathematical Expectation, Two dimensional random variables and their distribution functions, Marginal probability function, Independent random variables, Expected value of two dimensional random variable.	8	15
3	Special Probability Distributions: Binomial distribution, Poisson distribution, Poisson approximation to the binomial distribution, Normal distribution.	10	25
4	Measure of central Tendency and Dispersion: Mean, Mode, Median, Quartile, Decile and Percentile, Quartile Deviation, Mean Deviation, Standard Deviation, coefficient of variation.	4	10
5	Statistical Measures of Distribution and Relationship: Moments, Skewness, Kurtosis, Linear Correlation, Correlation coefficient, Rank correlation coefficient, Regression lines.	8	15
6	Applied Statistics: Formation of Hypothesis, Test of significance: Large sample test: for single proportion, Difference of proportions, Single mean, Difference of means, and Difference of standard deviations. Test of significance for Small samples: t- Test for single mean, difference of means, t-test for correlation coefficients, F- test for ratio of variances, Chi-square test	10	25
Total		45	100

Suggested Distribution Of Theory Marks Using Bloom's Taxonomy						
Level	Remembrance	Understanding	Application	Analyze	Evaluate	Create
Weightage	10	15	75	0	0	0

NOTE : This specification table shall be treated as a general guideline for the students and the teachers. The actual distribution of marks in the question paper may vary slightly from above table.

**Course Outcomes**

At the end of this course, students will be able to:

C01	Understand the terminologies of basic probability
C02	Understand two types of random variables and their probability functions
C03	Observe the behavior of various discrete and continuous probability distributions.
C04	Understand the central tendency and dispersion.
C05	Understand the correlation and correlation coefficient and regression.
C06	Apply the statistics for testing the significance of the given large and small sample data by using t-test, F- test and Chi-square test

Reference Books

1.	Fundamentals of Mathematical Statistics By S. C. Gupta and V. K. Kapoor Sultan Chand & Sons 11th Edition
2.	Probability and Statistics (TextBook) By R. Singh, M. Bhatt, S. Chand Publication.
3.	S. Ross, First Course in Probability, Pearson Education India (2020)
4.	P. G. Hoel, By S. C. Port and C. J. Stone, Introduction to Probability Theory Universal Book Stall 2020
5.	An Introduction to Probability Theory and its Applications By W. Feller Wiley 1971
6.	Applied Statistics and Probability for Engineers, By D. C. Montgomery and G. C. Runger Wiley 2010
7.	Probability and Statistics for Engineering and the Sciences By J. L. Devore, Cengage Learning 2000
8.	S. P. Gupta, Statistical methods, S. Chand & Sons (2021)