

FACULTY OF COMPUTER APPLICATIONS

Programme	Master of Computer Applications	Branch/Spec.	Computer Application
Semester	I	Version	1.0.0.0
Effective from Academic Year	2026-27	Effective for the batch Admitted in	July 2026
Subject Code	P11C4AMS	Subject Name	Applied Mathematics and Statistics

Teaching scheme					Examination scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	2	1	-	0	3	Theory	40	60	100
Hours	2	1	-	0	3	Practical	-	-	-

Objective:

To develop a strong foundation in applied mathematics and statistics for analyzing data, solving computational problems, and supporting decision-making in computer science applications.

Pre-requisites:

Fundamental mathematical concepts (algebra, functions, matrices, and basic statistics)

Course Outcomes:

Name of CO	Description
CO1	Apply set theory, permutation & combination, matrices, graph theory, and probability concepts to solve mathematical and computational problems
CO2	Calculate descriptive statistical measures to summarize and interpret data effectively.
CO3	Perform hypothesis testing using t-test, Chi-square test, ANOVA, covariance, and correlation for data-driven decision making
CO4	Analyze mathematical and statistical methods to solve real-world problems in computer science and data analysis

Mapping of CO and PO

Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO1	3	2	1	2	0	0	0	1
CO2	3	3	1	2	0	0	0	1
CO3	2	3	2	3	0	0	0	1
CO4	2	3	3	2	1	0	0	2

Content:		
Unit	SECTION – I	Hrs
1	Set Theory: Introduction, Concepts and Notations, Representation of Sets, Universal Set, Null Set, Singleton Set, Subset of set, Equality of two sets, Equivalent Sets, Power set, disjoint 2 Set, Set Operations: Venn Diagram, Union, Intersection; Complement of Sets, Differences of two sets, Symmetric Differences, Cartesian Products, The Algebraic Laws of set theory. Set Identities: Distributive Law, DE Morgan's Law; Application of set theory: cardinality or size of set; Permutation Combination: Factorial notation, Number of permutations, Number of combinations, Facts and formulae of permutation and combinations.	10
2	Matrix and Metrics: Definition and notation, Types of matrices: Row matrix Column matrix, Rectangular matrix, Square matrix, Zero (Null) matrix, Identity matrix, Diagonal matrix, Scalar matrix, Upper and Lower Triangular matrices, Symmetric and Skew-Symmetric matrices. Matrix Operations: Addition and subtraction, Scalar multiplication, Matrix multiplication, Transpose of a matrix Graph Theory: Definition, Types of Graph, Vertices and Edges, Directed vs. Undirected, Weights and Cycles, Graph Terminology: Degree of a vertex, In-degree and Out-degree, Adjacent vertices, Incident edges, Pendant (Leaf) vertex, Isolated vertex, Paths and Connectivity, Real-world applications of graphs Probability: Experiment and Random experiment, Sample space, Probability of Occurrence of an event, Results on probability, Application of Probability	12
SECTION – II		
3	Descriptive Statistics: Types of data (Qualitative and Quantitative), Population and Sample Measures of Central Tendency: Mean, Median, Mode, Measures of Dispersion: Range, Quartile Deviation (Semi-Interquartile Range), Mean Deviation, Variance, Standard Deviation, Skewness and Kurtosis: Meaning of skewness, Symmetric distribution, Positive (Right) skewness, Negative (Left) skewness, Meaning of kurtosis, Mesokurtic distribution, Leptokurtic distribution, Platykurtic distribution	12
4	Hypothesis testing: Concept of Statistical Hypothesis, Null Hypothesis (H_0), Alternative Hypothesis (H_1), One-tailed and Two-tailed Tests, Level of Significance (α), ANOVA Test: Introduction to ANOVA, One-Way ANOVA, Between-group and Within-group Variance, Chi-square test, t-test, Covariance and correlation	11
Practical Content:		

No practical Content	
Text/Reference Books:	
Web References / MOOC / Certification Course	
1	Advanced Mathematics by Heena Timali, Books India Publication
2	Fundamentals of Statistics by S.C. Gupta
3	Fundamental Of Mathematical Statistics-S C Gupta & V K Kapoor
Question Paper Scheme:	
	University Examination Duration: 3 Hours Note for Examiner: - (I) Questions 1 and 4 are compulsory with no options. (II) Internal options should be given in questions 2, 3, 5 and 6. SECTION - I Q.1 -8 Marks Q.2 -11 Marks Q.3 -11 Marks SECTION - II Q.4 -8 Marks Q.5 -11 Marks Q.6 -11 Marks