



SARVAJANIK UNIVERSITY
Sarvajani College of Engineering and Technology
Master of Computer Applications



Integrated MCA II Semester 3

Subject Name: Mathematics – 2

Subject Code: IMCA11309

Type of course: Basic Science Course

Prerequisite (if any):

- Mathematical Fundamentals

List of Courses where this course will be prerequisite:

Rationale: Discrete mathematics is important for a number of reasons, including Problem-solving, Computing, Real World problems. Discrete mathematics is a powerful tool for solving problems in a technology-reliant society. It can be used to manage large data sets, draw inferences from noisy data, and create algorithms to scale up computations.

Statistical methods are helpful to determine correlations between variables and make informed decisions.

Teaching and Examination Scheme:

TEACHING SCHEME				Theory Marks		Practical Marks		Total
L	T	P	C	TEE	CAT	TEP	CAP	
3	1	0	4	60	40	0	0	100

CAT: Continuous Assessment Theory comprised of CA1 and CA2 **CA1:** Continuous Assessment (assignments/projects/open book tests/closed book tests **CA2:** Sincerity in attending classes/class tests/ timely submissions of assignments/self-learning attitude/solving advanced problems **TEE:** Term End Examination **TEP:** Term End Practical Exam (Performance and viva on practical skills learned in course) **CAP:** Regular submission of Lab work/Quality of work submitted/Active participation in lab sessions/viva on practical skills learned in course





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Content:

Sr. No.	Content	Teaching Hrs.	Module Weightage
1	Descriptive Statistics: Central Tendency: Measures of Location: Mean, Weighted Mean, Median, Geometric Mean, Mode, Percentiles, Quartiles Measures of Variability: Range, Interquartile Range, Variance, Standard Deviation, Coefficient of Variation Distribution Shape, Five-Number Summary	10	25%
2	Measures of association between two variables: Covariance, Correlation, Coefficient of Correlation; Skewness: Coefficient of Skewness; Kurtosis Measures of Association: Correlation, Coefficient of Correlation, Rank correlation	06	20%
3	Linear Regression Introduction, Simple Regression Model, Fitting of straight line using Least Squares Method, Coefficient of Regression, Relation between regression coefficients and correlation coefficient, the Equation of Regression Lines	08	15%
4	Introduction to Data Tabular and Graphical Displays Bar charts and Pie charts, Dot Plot, Histograms, Stem and Leaf Display, Cross tabulations, Scatter Diagram	06	15%
5	Set Theory, Propositional & Predicate Logic Set Theory: Basic Concepts of Set Theory: Definition, Methods to Describe (Represent) Sets; Examples, (Im)proper Subsets, Superset, Equality of Sets; Empty (Null) Set, Universal Set, Finite and Infinite Sets, Power Set; Operations on Sets: Union, Intersection, Complement, Venn Diagrams, Disjoint Sets, Various Laws: Identity, Idempotent, Commutative, Associative, Distributive, Absorption, DE Morgan's Laws; Difference (Relative Complement), Symmetric Difference of Two Sets; Cartesian Product; Power Set of a Set, Finite sets and counting principles Propositional Logic & Predicate Logic: Definition, Statement (Proposition) & Notation, Truth Values, Connectives: Negation, Conjunction, Disjunction, Implication (condition), Bi implication (Bi conditional), Truth Tables for all Connectives, Statement Formulas (Well-formed Formulas), Truth Tables, Tautologies, Contradiction, Logical Equivalence:	15	25%





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Commutative Laws, Associative Laws, Distributive Laws, Absorption Laws, Idempotent Laws, Double Negation Law, De Morgan's laws, Examples; Validity of Arguments, Some Valid Argument Forms: Modus Ponens, Modus Tollens, Disjunctive Syllogism, Dilemma, Equivalence of Formulas: Conjunctive Simplification, Disjunctive Addition, Conjunctive Addition, Examples and Exercises		
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Suggested Specification table with Marks (Theory):

%Distribution of Marks					
R Level	U Level	A Level	N Level	E Level	C Level
10	10	25	25	30	0

**Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate
C: Create and above Levels (Revised Bloom's Taxonomy)**

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





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Reference Books:

Sr. no.	Title of book /article	Author(s)	Publisher and details like ISBN	Year of publication	Publication Edition
1	Business Statistics: Contemporary Decision Making	Ken Black	Wiley India Pvt Ltd ISBN: 978-8126521548	2009	5 th Edition
2	Statistics for business and economics	Anderson, Sweeney, Williams, Camm, Cochran	Cengage Learning ISBN: 978-81-315-2813- 6	2016	12 th edition
3	Discrete Mathematics	D. S. Malik & M. K.Sen	Cengage Learning ISBN:978-8131518663	2012	1 st Edition
4	Discrete Mathematics and its application	K. H. Rosen	Tata McGraw-Hill ISBN:978-0073383095	2012	7 th Edition

Course Outcomes:

Sr. No.	CO Statement After learning this subject, students will be able to	Marks % Weightage
CO-1	Ability to apply various concepts, techniques and methods used in Descriptive Statistics and Inferential Statistics in carrying out preliminary Data Analytics tasks	25
CO-2	Learn the Measures of association between two variables	20
CO-3	Apply linear regression models in practice and identify situation where linear regression is appropriate; build and fit linear regression models with software	15
CO-4	Produce exploratory graphs	15
CO-5	Create a foundation of basic mathematical concepts of Set Theory, Propositional & Predicate Logic	25





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Mapping with POs:

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PO 13
CO-1	3	1	1	1	2	0	1	0	1	0	1	2	1
CO-2	3	1	1	1	2	0	1	0	1	0	1	2	1
CO-3	3	1	1	1	2	0	1	0	1	0	1	2	1
CO-4	3	1	1	1	2	0	1	0	1	0	1	2	1
CO-5	3	1	1	1	2	0	1	0	1	0	1	2	1
Rationale*													

Rationale*: Explaining why it is matching this particular program outcome

List of Open learning website: NA

List of Open-Source Software: NA

Major Equipment Needed: NA

