

Subject Code: 1ET1100101	Subject Title: Basic Mathematics
Prerequisite	-

Course Objective:

Aimed to solve standard topical textbook-level problems by analytical means. Apply multiple concepts in the solution of a more sophisticated problem, which may be derived from a scientific application or from basic application. Model a topical problem from math, solve the problem, and report the results in the original problem context

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)				
Lecture	Tutorial	Practical	Credit	Theory		Practical		Total
				University Assessment	Continuous Assessment	University Assessment	Continuous Assessment	
3	2	0	5	70	30	00	00	100

Subject Contents			
Sr. No	Topic	Total Hours	Weight (%)
1	Set theory: Introduction, Representation of sets, Universal set, Empty set, Finite set, Infinite set, Subset, Disjoint set, Equality of two sets, Equivalent sets, power set, Venn diagram, Set operations: Union, Intersection, Difference, Symmetric difference, Complements, Cartesian product of two sets, the algebraic laws of set theory. Examples related to cardinality of sets.	08	12
2	Matrices: Introduction, Unit matrix, Square matrix, Transpose of a matrix, Invertible matrices, Diagonal and Anti diagonal elements of matrices, zero matrix, row and column matrix, Symmetric matrix, Skew symmetric matrix, Upper and Lower triangular matrix. Arithmetic Operations on matrices: Addition, Subtraction, Additive Inverse and Multiplication of matrices.	08	12
3	Graph theory: Introduction, Graph and multi graphs, Finite graphs, Trivial graph, Sub graph, isomorphic graphs, Homeomorphic graphs, Paths, Hamiltonian graphs, Eulerian Graph, Complete, Regular and Bipartite graphs.	07	11
4	Function: Introduction, Definition , Domain, Co-Domain and Range of Function, Types of Function: In to Function, On to Function, One to One Function , Many to One Function, One to One Correspondence and its Examples.	08	12
5	Group and Subgroup: Binary Operations, Properties of Binary Operations, Semi group, Monoid, Group, Subgroups and other Groups	07	12
6	Data Analysis: Data and Statistical Data, Frequency Distribution, Graphical Representation, Measure of the Central Tendency, Measure of Dispersion, Kurtosis, skewness.	07	11

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Discuss the knowledge on the fundamentals of Mathematics	2 Understanding
CLO2	Know the set theory and able to perform the operations	2 Understanding 3 Applying
CLO3	Know the Matrix and able to perform the algebraic operations on matrices.	2 Understanding 3 Applying
CLO4	Understood the different types of Graphs and able to define it.	2 Understanding
CLO5	Understood the different types of functions and its relations	2 Understanding
CLO6	Understood the concepts of statistics and able to analyze data	3Applying 5 Evaluate

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1	L												L			
CLO2		L			L									M		
CLO3		M			L								L			
CLO4					M									M		
CLO5	M	L	M										L			
CLO6		M			L											

H: High, M: Medium, L: Low

Course Outcome:

At the end of this course, the student would be able

1. Discuss the knowledge on the fundamentals of Mathematics.
2. Know the set theory and able to perform the operations.
3. Know the Matrix and able to perform the algebraic operations on matrices.
4. Understood the different types of Graphs and able to define it.
5. Understood the different types of functions and its relations.
6. Understood the concepts of statistics and able to analyze data.

List of Book References:

1. Discrete Mathematics by Seymour Lipschutz and Marc Lipson.-McGraw Hill, Third Edition.
2. Business Mathematics by Sancheti& Kapoor, S.Chand& Sons.
3. Discrete Mathematical Structure by Kolman, Busby and Ross, PHI
4. Advance Engineering Mathematics, Vol-1 by Dr. V.P. Misra, Dr. Jyoti Sinha, Pratibha Mishra
5. Linear Algebra & Vector Calculus by Dr. K. R. Kachot& Dr. Atul Patel

List of Open Source Software/learning website:

1. <https://alas.matf.bg.ac.rs/~mi10164/Materijali/DS.pdf>