MLD- BASIC MATHEMATICS (3 CREDITS- 4 hrs) -48 hrs

Course Objectives	Description
1	Learn linear systems, matrices, dot product, and matrix transformations.
2	Solve linear systems using row echelon forms, polynomial interpolation, and matrix inversion.
3	Understand logic, truth tables, algebra of propositions, and set operations.
4	Apply principles of inclusion-exclusion, addition/multiplication rules, and pigeonhole principles.
5	Learn permutations, combinations, and elementary probability.

Course Outcomes	Description
CO1	Analyze linear systems and matrix transformations.
CO2	Solve linear systems using various matrix forms and polynomial interpolation.
CO3	Apply logic and set theory operations to solve problems.
CO4	Use inclusion-exclusion, addition/multiplication rules, and pigeonhole principles in problem-solving.
CO5	Calculate permutations, combinations, and apply elementary probability to problems.

Unit I:

Linear System – Matrices – dot Product – Matrix multiplication – properties of Matrix operations – Matrix transformation.

Unit II:

Solution of linear system of equations – row echelon form – reduced row echelon form – Polynomial interpolation – inverse of a matrix – linear systems.

Unit III:

Logic – truth table – algebra of propositions- logical arguments – sets- operations on sets.

Unit IV:

Principle of inclusion – exclusion – the addition and multiplication rules – pigeonhole principles.

Unit V:

Permutations – Combinations – Elementary Probability.

Text Book:

1. Bernard Kolman, Dred. R. Hill, Introductory Linear Algebra, 8th edition – peasson, India 2011.
2. Edgar G. Goodaire, Michael. M. Parmenter, Discrete Mathematics with Graph Theory, 3e PHI, India, 2011.