MATHEMATICAL FOUNDATION FOR COMPUTER SCIENCE

**Objective**

Study the fundamental concepts of logic, abstract algebra, linear algebra,etc…

**Unit I**

Functional Logic: Proposition Logic, Predicate logic. Congruences, Fermat's theorem, Euler function, Chinese remainder theorem. Linear algebra: Matrix and Determinant Types of Matrices and its properties, Row echelon form, Reduced row echelon form, Rank by row operation, Inverse of Matrix by row operation, Determinant, Rank by determinant, Inverse of matrix by Adjoint method.

**Unit II**

System of Linear Equations Homogeneous and Non-homogeneous system of Linear equations, Methodology of Gauss-elimination and Gauss-Jordan-elimination, Cramer’s Rule, Solution of a system through L-U Decomposition, Consistency of a system of Linear equations. Eigen Values and Eigen Vectors Eigen values and Eigen vectors of a matrix, Algebraic Multiplicity and Geometric Multiplicity,Cayley - Hamilton theorem.

References:

1. Introduction to linear algebra with application, jim defranza, Daniel Gagliardi, tata mcgraw-hill
2. Elementary Linear Algebra, Applications version, Anton and Rorres, Wiley India Edition.
3. Linear Algebra, Ron Larson, Cengage Learning
4. Linear Algebra and its Applications, David C. Lay, Pearson Education