Course Code (BCA-GE1103) **Semester-I**
Course Title: Fundamentals of Mathematics **Total Credits: 06**

Course Objective

To promotes mathematical skills for developing proficiency in analytical reasoning.

Unit-I

Determinants: Determinants of order 2 and 3, properties of determinants; evaluation of determinants, crammer's rule.
Matrices: Definition, equality, addition and multiplication of matrices, Adjoint and inverse of a matrix, Transpose of matrix; Solution of a system of linear equations: homogeneous and non- homogeneous; Elementary row transformations, rank of a matrix.

Unit -II

Sequence and Series: Definition of sequence and series; A.P, G.P & H.P, Σn, Σn^2 and Σn^3, Concept of limit of a sequence.
Complex Numbers: Complex number in the form of a+ib; Addition, multiplication, division of complex numbers ;Conjugate and modulus of complex numbers; De Moivre's Theorem without proof.

Unit-III

Limits and Functions: Definition: function, limit of a function and derivative; Evaluation of
a limit of a function; Derivatives of some important function by first principle(Ab initio method);Differentiation of logarithmic functions, exponential functions and trigonometric functions.

Unit-IV
Theory of Equations : Elements of theory of polynomial equations, relation between roots and coefficients of an equation; Transformation of equations; Solution of quadratic , cubic and bi-quadratic equations; Newton's method of finding the sum of powers of the roots of the equations.

References:

1. **R.S.Agarwal**, "Text Book of Mathematics", S. Chand.
2. **Shanti Narayan,"** Integral calculus".
3. **Erwin Kreyszig,"** Engineering Mathematics ".
4. **G.M.Shah,** "Theory of Equations", Kashmir Book Depot.