



Paper Code : MAT:101
Paper Name : Mathematics-I

Teaching Hours (Per Week)		Examination Scheme		
TH. (hours)	Pr. (hours)	Internal	External	Total
		Th. (marks)	Th. (marks)	
4		30	70	100 (marks)

Lectures = 68 Hours

Objective:

Mathematics is about pattern and structure; it is about logical analysis, deduction, calculation within these patterns and structures. When patterns are found, often in widely different areas of science and technology, the mathematics of these patterns can be used to explain and control natural happenings and situations.

Qualifying in mathematics helps in having a wide range of career choices. The abilities

- to use logical thought,
- to formulate a problem in a way which allows for computation and decision,
- to make deductions from assumption,
- to use advanced concepts,

are all enhanced by a mathematics course.

Details Syllabus

UNIT I

DETERMINANTS

14 Hrs.

Definition, Co-factors, Properties of Determinants MATRICES: Definition, Types of Matrices, Addition, Subtraction, Scalar Multiplication and multiplication of Matrices, Adjoint, Inverse, Cramer's rule, Rank of Matrix, Gaussian elimination Eigen vectors of a Matrix, Caley- Hamilton theorem (without proof).

UNIT II

PROGRESSIONS:

12 Hrs.

Arithmetic Progression, Sum of Series in A.P, Arithmetic Mean, Geometric Mean, Geometric Progression, Sum of a Series in G.P. Harmonic Progressions. Mathematical Induction, Sequences and Series.

UNIT III

DIFFERENTIAL CALCULUS:

15 Hrs.

Derivative of a function, important derivatives using first principle, derivative of sum, differences, derivatives of composite functions, Mean value theorem, partial differentiation, successive differentiation, Total Differentiation.



UNIT IV

INTEGRAL CALCULUS

15Hrs.

Definition, fundamental theorem of calculus, Methods of integration by parts, by substitution, integration of algebraic and trigonometric functions, Definite integrals.

UNIT V

PERMUTATIONS & COMBINATIONS:

12 Hrs.

Fundamental rule of counting, factorial notation, permutations, Circular permutations, permutation of n different things, permutation of things not all different. Combinatons, restricted combinations, combinations of things not all different.

RECOMMENDED BOOKS

1. Kresyig E, "Advanced Engineering Mathematics", 5th Edition, John Wiley & Sons.
2. D. C. Sanchetti & V. K. Kapoor, "Business Mathematics"
3. H. K. Dass, "Advanced Engineering Mathematics"
4. Shanti Narayan, "Differential calculus" & "Integral Calculus".
5. Thomas & Finney: "Calculus with Analytical Geometry"