

# 17BB103-BUSINESS MATHEMATICS

## Course Description and Objective:

The objective of this course is to familiarize the students with mathematical tools useful for decision making. Students will learn set theories, types of matrices, binomial theorem, derivatives of standard function and knowledge of integrals. (Proofs and derivations are excluded).

## Learning outcome

After reading this course student can able to understand

1. Set, elements of set, methods of describing a set, types of sets, Venn diagrams, Operations on sets, Algebra of sets, Cartesian product of sets, Set relations and its properties.
2. Types of matrices, scalar multiplication of matrix, equality of matrices, addition, subtraction, multiplication of matrices, determinants, Cramer's rule, solution of linear equations, inverse of a matrix, solution of equations by matrix method and rank of a matrix.
3. Binomial theorem, position of terms, binomial coefficients and its applications.
4. Understand the concept of arithmetic and geometric progressions.
5. The derivative and the derivatives of standard functions, additive, multiplicative and quotient rules of derivatives, maxima and minima of a function.

## UNIT-I:

**Set Theory:** Definition of Set, Presentation of Sets, Different types of Sets- Null Set, Finite and Infinite Sets, Universal Set, Subset, Power Set etc., Set operations: Laws of algebra of Sets and problems., Cartesian product of sets.

## UNIT-II

**Matrix Algebra:** Introduction operations on matrices: Addition, subtraction and multiplication of matrices –adjoint of matrix, inverse of a matrix - solution of simultaneous equations (Cramer's rule and matrix inverse method), rank of matrix

### UNIT-III

**Binomial Theorem:** Statement of the theorem for positive integral index - General term - Middle term - Equidistant terms- Simple properties of binomial coefficient.

### UNIT IV

#### **Arithmetic and Geometric Progressions:**

Introduction, Arithmetic progression, sum of a series in A.P. Arithmetic mean, geometric progression, sum of series in G.P. geometric mean.

### UNIT-V

**Differentiation:** Interdiction basic laws of derivatives- product rule – quotient rule - higher order Derivatives - maxima and minima of functions.(Simple algebraic and simple trigonometric functions only)

#### **Skill Development:**

*(These activities are only indicative; the Faculty member can innovate)*

1. Identify the applications of business mathematics for solving managerial problems.
2. Take any applications of business problem and solving using matrices.
3. List the uses binomial theorem, arithmetic and geometric progression in business.
4. Write the various applications of differentiation in business.

#### **Text Books:**

1. D. C. Sancheti and Kapoor V.K ., Business mathematics Sultan Chand & sons ,new Delhi, 6<sup>th</sup> edition.

#### **Reference Books:**

1. Business Mathematics, Sancheti. D.C., Sultan Chand, 1979, New Delhi, 6<sup>th</sup> edition.
2. Kappor V.K., Introductory Business Mathematics”, 14<sup>th</sup> revised, New Delhi, Sultan Chand, 2005.