# NEP SYLLABUS OF GAUHATI UNIVERSITY

*1st Semester*

**Course Name : Business Mathematics (Multi-disciplinary)**

**Credit: 3**

**Total Marks: 100**

## Unit I: Introduction to Business Mathematics:

Linear, Quadratic, and system of Simultaneous linear equations - Application of concept of equations to business and commerce, Time and work: Simple cases, Profit, Loss and discount (business applications), Shares- Concept of share, face value, Market value, equity shares, preferential shares, dividend, bonus shares, Ratio and proportion- Finding the missing term of the proportion, merging of two ratios in one, Concept of mixture and its examples

## Unit 2: Interest & Annuities:

Concept of Simple Interest & Compound Interest (solution of related problem), PV and FV of single principal amount, Annuity –Types of annuities: ordinary, due, deferred, continues, perpetual their future and present values using different types of rates of interest. Depreciation of Assets. Definition of sinking fund (General annuities to be excluded).

## Unit 3: Matrices and Determinants:

Algebra of Matrices, Matrix operation- Business Application, Determinant of a square matrix. Evaluation determinant of order three (Properties of determinants to be excluded), Inverse of a matrix, Solution of system of linear equations (having unique solution and involving not more than three variables) using Cramer's Rule.

## Unit 4: Differential Calculus:

Concept of limit and continuity of a function (simple functions only), Concept of differentiation, Rules of differentiation, Derivatives of $e^x$, $a^x$, $\log x$ (only result). Differentiation of simple algebraic functions, concept of partial differentiation (simple business problem), Maxima and minima involving second order derivative (relating to cost, revenue and profit), Concept of Marginal Analysis- The common marginal concept in economics and their application in Business. Profit Maximization under Monopoly. Economic Order Quantity.

## Unit 5: Integration:

Preliminary idea, definite integrals (simple polynomial functions), determination of area using definite integrals, application of integral calculus to Marginal analysis

## Unit 6: Linear Programming:

Linear Programming: Sketching of graphs of (i) Linear equation $ax + by + c = 0$ and (ii) Linear inequalities b) Formulation of linear programming problem (LPP). Graphical solution to LPP