B.COM. (HONS.): SEMESTER – III	CORE-6: BCH320C2: BUSINESS MATHEMATICS
CREDITS : THEORY: 4, TUTORIAL: 2	MARKS: THEORY: 60; TUTORIAL: 30
	TOTAL MARKS: 90

BUSINESS MATHEMATICS

Objective: *The objective of this course is to familiarize the students with the basic mathematical tools, with an emphasis on applications to business and economic situations.*

CONTENTS (THEORY):

Unit - 1 **(Marks: 15)**

Matrices and Determinants

Algebra of matrices. Inverse of a matrix, Matrix Operation – Business Application. Solution of system of linear equations (having unique solution and involving not more than three variables) using matrix inversion Method and Cremer's Rule.

Unit - 2 **(Marks: 15)**

Calculus I

Mathematical functions and their types- linear, quadratic, polynomial, exponential, Logarithmic function. Concepts of limit, and continuity of a function. Concept and rules of differentiation, Maxima and Minima involving second or higher order derivatives. Concept of Marginal Analysis, Concept of Elasticity, Applied Maximum and Minimum Problems including effect of Tax on Monopolist's optimum price and quantity, Economic Order Quantity.

Unit - 3 **(Marks: 15)**

Calculus II

Partial Differentiation: Partial derivatives up to second order; Euler's theorem on Homogenous functions. Total differentiation, differentiation of implicit functions with the help of total differentiation. Integration: Standard forms. Methods of integration – by substitution, by parts, and by use of partial fractions; definite integration; Finding areas in simple cases. Application of Integration to marginal analysis. Consumer's and Producer's Surplus, Rate of Sales and the Learning Curve.

Unit - 4 **(Marks: 15)**

Mathematics of Finance

Rates of interest-nominal, effective and their inter-relationships in different compounding situations. Compounding and discounting of a sum using different types of rates. Types of annuities, like ordinary, due, deferred, continuous, perpetual, and their future and present values using different types of rates of interest. Depreciation of Assets.

TUTORIAL: Unit – 5 and Unit – 6 **(Marks: 30)**

Tutorials | Assignment | Presentation based.

Unit 5

Linear Programming Formulation of linear programming problem (LPP). Graphical solution to LPP. Cases of unique and multiple optimal solutions. Unbounded solutions, infeasibility, and redundant constraints.

Unit 6

Linear Programming Solution to LPP using Simplex method – maximization and minimization cases. Shadow prices of the resources. Identification of unique and multiple optimal solutions, unbounded solution, infeasibility and degeneracy.

Suggested Readings:

1. *Mizrahi and Sullivan. Mathematics for Business and Social Sciences. Wiley and Sons.*
2. *Budnick, P. Applied Mathematics. McGraw Hill Education.*
3. *R.G.D. Allen, Mathematical Analysis For Economists*
4. *Ayres, Frank Jr. Schaum's Outlines Series: Theory and Problems of Mathematics of Finance. McGraw Hill Education.*
5. *Dowling, E.T., Mathematics for Economics, Schaum's Outlines Series. McGraw Hill Education.*
6. *Wikes, F.M., Mathematics for Business, Finance and Economics. Thomson Learning.*
7. *Thukral, J.K., Mathematics for Business Studies.*
8. *Vohra, N.D., Quantitative Techniques in Management. McGraw Hill Education.*
9. *Soni, R.S,. Business Mathematics. Ane Books, New Delhi.*
10. *Singh J. K., Business Mathematics. Himalaya Publishing House.*

Note: Latest edition of text books may be used.