B.Com. (Hons.): (CBCS)
Semester - IV
C 409-BUSINESS MATHEMATICS(6 Credit)
Lectures: 60 Tutorial 5
Full Marks: 100 (Internal Assessment 20 + 80 End-Term)

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.

Unit 1: Matrices and Determinants

a. Algebra of matrices. Inverse of a matrix, Matrix Operation – Business Application
b. 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: Calculus I

a. Mathematical functions and their types- linear, quadratic, polynomial, exponential,
b. Logarithmic function Concepts of limit, and continuity of a function
c. Concept and rules of differentiation, Maxima and Minima involving second or higher order derivatives.
d. 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: Calculus II

a. Partial Differentiation: Partial derivatives up to second order; Homogeneity of functions andEuler's theorem; Total differentials; Differentiation of implicit functions with the help oftotal differentials
b. Maxima and Minima: Cases of two variables involving not more than one constraint including the use of the Lagrangian multiplier.

Unit 4: Mathematics of Finance

a. Rates of interest-nominal, effective– and their inter-relationships in different compounding situations.
b. Compounding and discounting of a sum using different types of rates.
c. 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.(*General annuities to be excluded*)

Unit 5: Linear Programming

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

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Note:

1. In addition the students will work on software packages (Spreadsheet, *Mathematica*, etc) for solving linear programming problems and topics listed in Unit 4 above and analyze the results obtained there from. This will be done through internal assessment.

2. There shall be 4 Credit Hrs. for Lectures + one Credit hr. (Two Practical Periods per week per batch) for Practical Lab + one credit Hr for Tutorials (per group)

3. Latest edition of text books may be used.

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.

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CHAIRPERSON
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