



Bharati College
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Lesson Plan (CORE, Semester IV, January to April 2023)

Name of Teacher	Dr. Sonali Jain	Department	Commerce
Course	B. Com(H)	Semester	IV
Paper	Business Mathematics	Academic Year	2022-23

Learning Objectives

- Familiarize the students with the basic mathematical tools with special emphasis on applications to business and economic situations.

Learning Outcomes

After completing the course, the student shall be able to

- Develop skillset to solve business and economics problem through matrices, calculus, linear programming, and mathematics of finance
- Develop competency to use software for mathematical calculation to arrive at an optimum solution to business or economics problems.

Lesson Plan

Week No.	Theme/Curriculum	Any Additional Information
1- 2	<ul style="list-style-type: none">Definition and types of matrix, Algebra of matrices, Inverse of a matrix- Business Applications. Solution of system of linear equations using matrix inversion method and Cramer's Rule. Leontief Input Output Model	
3- 4	<ul style="list-style-type: none">Concept of Marginal Analysis. Concept of Elasticity, Applied Maxima and Minima problems including effect of Tax on Monopolist's Optimum price and quantity, Economic Order Quantity.	
5-8	<ul style="list-style-type: none">Partial Differentiation: Partial derivatives up to second order. Homogeneity of functions and Euler's theorem. Total differentials. Differentiation of implicit functions with the help of total differentials. Maxima and Minima involving two variables – Applied optimization problems and Constraint optimization problems	

	<p>using Lagrangean multiplier involving two variables having not more than one constraint.</p> <ul style="list-style-type: none"> 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, The Learning Curve. 	
9-11	<ul style="list-style-type: none"> Formulation of Linear programming problems (LPPs), Graphical solutions of LPPs. Various cases. Solution of LPPs by simplex method - maximization and minimization cases. Shadow prices of the resources, Identification of unique and multiple optimal solutions, unbounded solution, infeasibility and degeneracy. The dual problem: Formulation, relationship between Primal and Dual LPP, Primal and Dual solutions (excluding mixed constraints LPPs). Economic interpretation of the dual. 	<ul style="list-style-type: none"> Use of solver add ins through excel software package for solving linear programming problems and analyze the results.
12-15	<ul style="list-style-type: none"> Rates of interest: nominal, effective and their inter-relationships in different compounding situations. Compounding and discounting of a sum using different types of rates. Applications relating to Depreciation of assets and Equation of value. Types of annuities: ordinary, due deferred, continuous, perpetual. Determination of future and present values using different types of rates of interest. Applications relating to Capital expenditure, Leasing, Valuation of simple loans and debentures, sinking fund. 	<ul style="list-style-type: none"> Use of log & antilog Tables, Exponential Tables, Present/Future value Tables Use of various statistical excel function for solving mathematics of finance problem and analyze the results.
References <ol style="list-style-type: none"> Thukral, J.K. <i>Business Mathematics</i>. Mayur Publications Sharma, S.K. & Kaur, Gurmeet. <i>Business Mathematics</i>. Sultan Chand Anthony, M. and Biggs, N. <i>Mathematics for Economics and Finance</i>. Cambridge University Press Budnick, P. <i>Applied Mathematics</i>. McGraw Hill Publishing Co. Dowling, E.T. <i>Mathematics for Economics</i>. Schaum's Outlines Series. McGraw Hill Publishing Co. 		
Online Resources (If Any)	NA	
Assignment and Class Test Schedule for Semester	Link the assignment and Test (optional)	