

Course Title: Business Mathematics**Course Objectives:**

The objective of this course is to provide basic knowledge of mathematical applications in Commerce and business. This course would enable students to apply financial and algebraic mathematics to business problems.
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Prerequisites:

No specific prerequisites are required for this course.

Course Contents

Exponential and Logarithmic functions	Understanding basics of exponents and logarithmic functions and their application to business and finance.
Equation of straight line and its application in business and economics	Understanding various forms of straight line equation and its application to various business problems
Simultaneous equation – linear and quadratic	Understanding simultaneous equations and their application to business problem
Coordinate system and line inequalities and their graphs	Understanding of basic coordinate systems and preparation of graphs Understanding of linear inequalities and preparation of graphs
Factorization of equations	Application of multiplication and division operations on linear and quadratic equations Solving quadratic equations through factorization and completing the square method
Arithmetic and Geometric progression	Understanding and applying arithmetic progression to business problems Understanding and applying geometric progression to business problems
Linear programming	Understanding application of linear programming using graphs Identification of constraints, cost minimizations, profit maximization, redundant constraints to solve programs Use of corner point theorem Analysis of graphical solution to see bounded or unbounded feasible regions
Basic Calculus: rules for differentiation-Sum, difference, product and quotient rules of differentiation	Understanding basic calculus and basic rules of differentiation.

Basic Calculus: Marginal function, calculation of revenue, costs and profits of marginal units	Application of differentiation techniques to calculate revenues, costs, and profits of marginal units
Basic calculus: Second order derivatives and their use	Learning to calculate maxima, minima, and point of inflexion
Fundamentals of matrices	Understanding of basic matrix algebra and its application (addition, subtraction, and multiplication) Learning to calculation of determinant, adjoin, and inverse of matrix
Solving simultaneous linear equations using Cramer's rule and matrix inverse method	Understanding to use matrix algebra for solution of simultaneous linear equations Application Cramer's rule matrix inverse method
Basics of financial mathematics: Simple interest, compound interest, present value, future value	Using basic functions of time value of money Calculation of simple and compound interest Calculation of present and future values of a single sum
Annuities	Understanding and calculation of present value and future value of annuities using both formula and financial table
Internal rate of return, interpolation, and perpetuities	Understanding and calculation of IRR, and present value of perpetuity

Teaching Methods: Lectures, discussions, presentations, quiz & assignments

Assessment Mechanism/Criteria

40% (40 Marks)	Internal Assessment by affiliated institution	*15Marks for Assignments, Quizzes and others **25 Marks for Mid-term Exam
60% (60Marks)	External Assessment by the Punjab University	Final Term Examination

Suggested Readings:

- 1 AFC-03 Quantitative Methods – Study Text by ICAP
- 2 Essential of College Mathematics (For Business & Economics) (11th Edition) By Raymond A. Barnett, Michael R. Zeigler
- 3 Applied Mathematics for Business, Economics, and the social sciences: By Frank