Name of the Programme: Bachelor of Commerce (Honors)
Course Code: COM-147   Title of the Course: Business Mathematics II
Number of Credits: 03 (1T+2P)
Effective from AY: 2023-24

Pre-requisites for the Course:	Nil	
Course Objectives:	Objectives of the Course are: 1. To provide mathematical literacy and foundations in concepts of Mathematics required in the areas of Economics, Finance, Commerce and Management 2. To develop an ability in mathematical reasoning and general intelligence. 3. To enable learners to integrate acquired knowledge and skills with practical problems in Business and Economics.	

Content:	**Unit 1: General Intelligence**
	 A. Mathematical Logic
	    • Logical Statement, Negation, Conjunction, Disjunction, Conditional and Bi-Conditional statements, truth tables, Tautology and Contradiction
	 B. General Aptitude and Logical Reasoning
	    • Meaning and Prerequisites
	    • Introduction to measures of aptitude, Logical reasoning, Verbal reasoning, Numerical ability, Abstract reasoning
		5 hours

	Unit 2: Matrices and Determinants
	    • Matrices: Definition, Types of Matrices, Matrix Operations-Addition, Scalar and Matrix multiplication, Inverse of a matrix.
	    • Determinants: Definition, Computation, Properties.
		5 hours

	Unit 3: Straight Lines, Linear Programming Problems, and Progressions
	 A. Straight Lines and Linear Programming Problems
	    • Coordinate system, Distance formula
	    • Equation of line: slope and intercepts, interpretations, equation of line, two-point form, slope-point form, slope-intercept form, two-intercept form, general form.
	 B. Progressions
	    • Arithmetic Progression: Definition, formula for nth term, sum of first n terms
	    • • Geometric Progression: Definition, formula for nth term, sum of first n terms
		5 hours

	Practicals
	 List of Practicals (Each practical of two hours each)
	 UNIT I
	    • Equivalence of logical statements
	    • Syllogism (with two premises)
	    • Syllogism (with more than two premises)
	    • Alphanumeric series
		60 hours

	• Analogies: Numerical analogy, word analogy • Coding-Decoding • Directions • Clocks • Blood relations • Reasoning using Venn diagram • Speed, Distance and Time • Work and Time UNIT II • Matrix multiplication • Computing determinants of matrices • Minor, Adjoint of a matrix • Computing inverse of a matrix • Solution of system of equations using elimination method • Solution of system of equations by Matrix Inversion method • Solution of system of equations using Cramer's rule UNIT III • Finding equation of line (two-point form, slope-point form) • Finding equation of line (slope-intercept form, two-intercept form) • General equation of a line • Distance in coordinate system • Graphs of linear equations and inequalities • Graphical method for LPP • Practical problems on nth term of a A.P. • Practical problems on nth term of a G.P. • Computing sum of first n terms of A.P. • Computing sum of n terms of G.P. • Deflation, Inflation, Depreciation Practicals using softwares like GeoGebra for interactive sessions is encouraged. Additional workshops on these softwares are recommended.	
Pedagogy:	Lectures, Practicals, Assignments	
Reference/ Readings:	1. Loney, S. L. (2019). The Elements of Coordinate Geometry, Math Valley Publishers. 2. Sharma, J. K. (2014). Business Mathematics: Theory and Applications (Ane's Student Edition), Lakshi Publishers. 3. Dikshit, A., & Jain J. K. (2009). Business Mathematics, Himalaya Publishing House. 4. Joshi N., & Chitale, S. G. (2015). A New Approach to Mathematical Techniques, Sheth Publishers. 5. Agarwal, R. S. (2018). A Modern Approach to Logical Reasoning (Second Edition), S. Chand Publications. 6. Vaidya, M.V., & Kumtha, A. P. (2022). Elementary Business Mathematics (Fifth Edition), Vipul Prakashan. 7. Seymour, L. (1998). Schaum's Outline of Set Theory and Related Topics (Second Edition), McGraw-Hill Education.	

	8. Sinha, N. (2020). Logical Reasoning and Data Interpretation for CAT (Seventh Edition), Pearson Education. 9. Robert, B., & Zima, P. (2011). Schaum's Outline of Mathematics of Finance (Second Edition), McGraw Hill Education.
Course Outcomes:	After completion of this course, the learners will be able to: **CO 1:** Analyse and relate acquired mathematical concepts to problems in Business and Economics **CO 2:** Solve problems on general aptitude and logical reasoning in view of various competitive examinations. **CO 3:** Demonstrate ability to solve system of equations and its applications in Operations Research. **CO 4:** Apply mathematical logic in reasoning and constructing mathematical arguments to provide proofs.