Name of the Programme: Bachelor of Commerce (Honors)
Course Code: COM-142 Title of the Course: Business Mathematics I
Number of Credits: 03 (1T+2P)
Effective from AY: 2023-24

Pre-requisites for the Course:	Elementary Mathematics	
Course Objectives:	Objectives of the Course are: 1. To provide mathematical literacy and foundations in concepts of Mathematics necessary in the areas of Economics, Finance, Commerce and Management 2. To demonstrate modelling of descriptive problems into mathematical formulae for solving business problems. 3. To enable learners to integrate acquired knowledge and skills with practical problems in Economics.	
Content:	**Unit 1: Mathematics of Finance** • Ratio, Proportions, Percentage • Simple Interest, Compound Interest • Annuity **Unit 2: Set Theory and Solutions of Algebraic Equations** • Sets: Definition, Representation, Types of sets, Operations on Sets, Power set, De Morgan's laws. • Relations and Functions, Domain, Co-domain, Range • Quadratic Equations **Unit 3: Calculus** • Derivatives and its applications: Definition, Computational formulae, Algebra of derivatives, derivatives of composite functions. Increasing/decreasing functions, Maxima and Minima. (Definition and Interpretation) • Integration and its applications: Definition, standard forms, Algebra of integration, Integration by parts, definite integrals. **Practicals** List of Practicals (Each practical of two hours each) UNIT I • Ratio • Proportions • Work and Time • Unit conversion (SI to metric, metric to SI) • Discounts • Profit and Loss • Compound Interest (compounded annually, half-yearly, quarterly, monthly) • EMI using interest on reducing balance and flat interest rate • Future value • Present value UNIT II • Venn diagram • Principle of inclusion and exclusion • Graph of a function	**5 hours** **5 hours** **5 hours** **60 hours**

	• Roots of quadratic equation
	• Numerical Solution of Algebraic Equations:
	  • Bisection method
	  • Regula-Falsi method
	  • Newton-Raphson method
	UNIT III
	• Cost/ Demand/ Revenue, Marginal Cost/ Demand/ Revenue
	• Elasticity of demand, supply
	• Increasing/decreasing functions
	  o Maxima and minima
	  o Area under a curve
	  o Consumer Surplus
	  o Producer's Surplus
	• Numerical Differentiation using:
	  o Newton's Forward difference
	  o Backward difference method
	  o Divided difference method
	• Numerical Integration using:
	  o Trapezoidal rule
	  o Simpson's one-third formula
	  o Weddle's formula
	Practicals using softwares like GeoGebra for interactive sessions is encouraged. Additional workshops on these softwares are recommended.	

Pedagogy:	Lectures, Practicals	
Reference/ Readings:	1. Clendenen, G., & Salzman, S. (2015). Business Mathematics (Global Edition), Pearson Education. 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. Sastry, S. S. (2012). Introduction to Numerical Analysis (Fifth Edition), Prentice Hall India Learning Pvt. Ltd. 5. Cain, J., & Emeritus, R. C. (2000). Mathematics for Business Careers (Fifth Edition), Pearson Education. 6. Eugene, D., & Lerner, J. (2009). Schaum's Outline of Basic Business Mathematics (Second Edition), McGraw-Hill Education. 7. Hilderbrand, F. B. (2003). Introduction to Numerical Analysis (Second Edition), Dover Publications Inc. 8. 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:** Solve problems in the areas of business calculus, simple and compound interest account, loan and consumer credit. **CO 2:** Undertake necessary computations for problems of interest, annuities and perpetuities, capitalized cost, depletion allowances, stocks and bonds. **CO 3:** Evaluate and select financial arrangements which are best for a consumer. **CO 4:** Demonstrate and use calculus in the areas of Commerce, Economics and Finance.	