MHZ3551 Engineering Mathematics I

Level	3
Course Code	MHZ3551
Course Title	Engineering Mathematics I
Credit value	5
Core/Optional	Core
Course Aim/s	To provide the knowledge in Mathematical logic, calculus, differential equations, and mechanics to solve Engineering problems.
Course Learning Outcomes (CLO):	At the completion of this course student will be able to CLO1: Express an argument using standard operators of logic; use laws of logic to formulate possible conclusions. CLO2: Apply the methods of proof to formulate mathematical solutions CLO3: Express given physical situations using sets, relations, and functions CLO4: Use of matrices in solving systems of Linear Equations. CLO5: Determine the convergence and divergence of infinite series using appropriate tests. CLO6: Determine the limits, continuity, and differentiability of functions; sketch the curves representing such functions; apply these techniques to solve physical problems. CLO7: Evaluate the limits, determine the continuity and differentiability; derive partial and total derivatives of functions with two variables. CLO8: Perform operations on matrices, sketch functions, compute (limits, differentiability, integrals, areas, and volumes), and solve differential equations using common software tools. CLO9: Apply Newton's laws of motion to rigid bodies; compute their motion characteristics (displacement, velocity, and acceleration).
Content	**Outline Syllabus:** Unit 1: Mathematical Logic and Methods of Proof Unit 2: Sets and Relations Unit 3: Matrix Algebra Unit 4: Functions Unit 5: Sequences and Series Unit 6: Limit, Continuity, Differentiability and Integrals Unit 7: Introduction to Functions of Two Variables Unit8: Differential Equations I - First Order Unit9: Differential Equations II – Higher Order Unit10: Software Tools for Mathematics I Unit11: Introduction to Mechanics