

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):	<p>At the completion of this course student will be able to:</p> <p>CLO1: Express an argument using standard operators of logic; use laws of logic to formulate possible conclusions.</p> <p>CLO2: Apply the methods of proof to formulate mathematical solutions.</p> <p>CLO3: Express given physical situations using sets, relations and functions.</p> <p>CLO4: Use of matrices in solving systems of Linear Equations.</p> <p>CLO5: Determine the convergence and divergence of infinite series using appropriate tests.</p> <p>CLO6: Determine the limits, continuity and differentiability of functions; sketch the curves representing such functions; apply these techniques to solve physical problems.</p> <p>CLO7: Evaluate the limits, determine the continuity and differentiability; derive partial and total derivatives of functions with two variables.</p> <p>CLO8: Perform operations on matrices, sketch functions, compute (limits, differentiability, integrals, areas and volumes), and solve differential equations using common software tools.</p> <p>CLO9: Apply Newton's laws of motion to rigid bodies; compute their motion characteristics (displacement, velocity and acceleration).</p>
Content	<p>Unit 2: Sets and Relations</p> <p>Unit 3: Matrix Algebra</p> <p>Unit 4: Functions</p> <p>Unit 5: Sequences and Series</p> <p>Unit 6: Limit, Continuity, Differentiability and Integrals</p> <p>Unit 7: Introduction to Functions of Two Variables</p> <p>Unit 8: Differential Equations I - First Order</p> <p>Unit 9: Differential Equations II – Higher Order</p> <p>Unit 10: Software Tools for Mathematics I</p> <p>Unit 11: Introduction to Mechanics</p> <p>Computer Based Activity</p> <p>Study of the Curve Sketching, Computing Limits, Derivatives, Integrals, Areas Study of common operational amplifier applications and solving differential equations</p>