MHZ3552 Engineering Mathematics II

Level	3
Course Code	MHZ3552
Course Title	Engineering Mathematics II
Credit value	5
Core/Optional	Core
Course Aim/s	To provide the knowledge in vectors, algebra, probability and statistics, numerical methods, and hydrostatics to solve Engineering problems.
Course Learning Outcomes (CLO):	At the completion of this course student will be able to CLO1: Explain and apply the basic concepts of descriptive statistics, probability and distribution theory to real life situations. CLO2: Compile and evaluate statistical reports. CLO3: Compute (Scalar Product, Vector Product and triple scalar product) and apply vectors to solve geometrical problems. CLO4: Solve dynamic problems using vectors and space curves. CLO5: Verify properties of complex numbers; apply D' Movier's theorem to obtain trigonometric identities and compute the powers of the complex numbers. CLO6: Apply theorems of limits to determine the continuity of complex functions and illustrate the image of a complex mapping. CLO7: Solve non- linear equations, systems of linear equations, and compute derivatives and integrals using numerical methods. CLO8: Express differentiable functions in the form of a power series and Taylor series; use such expressions to obtain approximate solutions. CLO9: Express periodic functions as Fourier series and determine their convergence. CLO10: Solve first and higher order differential equations using analytical techniques including Laplace Transformations. CLO11: Solve system of linear equations and sketch complex functions using software tools.
Content	**Outline Syllabus:** Unit 1: Introduction to Statistics Unit 2: Introduction to Probability Unit 3: Distribution Theory Unit 4: Vector Algebra Unit 5: Vector Functions and space curves Unit 6: Complex numbers Unit 7: Function on Complex variables Unit 8: Introduction to Numerical Methods Unit 9: Power Series Unit 10: Fourier Series Unit 11: Laplace Transform Unit 12: Software Tools for Mathematics II **Computer Based Activity:** Solving system of equations Sketching the graphs of complex functions and sketching the graph of complex function by using Software tools