DMX6304 Computational Fluid Dynamics

Level	6
Course Code	DMX6304
Course Title	Computational Fluid Dynamics
Credit value	3
Core/Optional	Optional
Course Aim/s	To provide the necessary knowledge and hands-on experience to use computational techniques to solve problems related to fluid flow dynamics.
Course Learning Outcomes (CLO):	At the completion of this course student will be able to CLO1: Identify appropriate techniques for the analysis of fluid flows. CLO2: Analyze fluid dynamics problems using differential and integral equations. CLO3: Analyze fluid flows using numerical techniques. CLO4: Model fluid flow using computational Fluid Dynamics software and interpret the results.
Content	**Outline Syllabus:** Unit 1: Governing Equations of CFD Unit 2 : Numerical methods for CFD Unit 3 : Discretization methods Unit 4 : Finite Difference methods Unit 5 : Finite volume methods Unit 6 : Turbulence modeling Unit 7 : Introduction to CFD software and Case studies **Mini-projects**: 1. Solving the incompressible Navier-Stokes equations on rectangular domains using Matlab. 2. Simulation of External flows using ANSYS (or other CFD software).