DMX4205 Strength of Materials I

Level	4
Course Code	DMX4205
Course Title	Strength of Materials I
Credit value	2
Core/Optional	Core
Course Aim/s	The aim of this course is to give theoretical knowledge supported by practical work, to analyze and design mechanisms using the concepts of strength of materials.
Course Learning Outcomes (CLO):	At the completion of this course student will be able to: CLO1: Determine the stress and strain due to complex loading conditions and analyze stress and strain using of Mohr's circles.
	of bending moment diagrams and shear force diagrams for stresses and deflections.
	due to torsion, when connected in series and parallel.
	CLO4: Demonstrate the knowledge of strain energy in the analysis of loaded components, and apply Castigliano's theorems to solve problems.
	CLO5: Determine stresses and strains set up in thin shells and wire wound thin cylinders due to internal pressure.
	CLO6: Demonstrate the knowledge on the behaviour of struts and columns under different loading conditions and determine the stresses and deflections.
	CLO7: Solve the problems combined torsion, axial loads and bending moments.
	CLO8: Analyze the stresses induced in closed coil helical springs due to axial loads.
Content	Outline Syllabus:
	Unit 1: Two - dimensional complex stress & strain systems Unit 2: Bending Unit 3 : Slope and deflection of beams Unit 4 : Shear stress distribution Unit 5 : Buckling of Struts and Columns Unit 6 : Strain energy Unit 7 : Torsion Unit 8 : Spring
	Laboratory work:
	 Examining the torsional behaviour of circular bars Determination of the forces developed in a triangular roof truss Determination of the spring stiffness Determining the deflection in beams under different loads