MECHANICS OF SOLIDS AND FLUIDS LAB

III Semester

Course Code	Category	Hours / Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
A5AE08	PCC	-	-	3	1.5	30	70	100

COURSE OBJECTIVES:

1. Analyze the behavior of the solid bodies subjected to various types of loading
2. Apply knowledge of materials and structural elements to the analysis of simple structures
3. Evaluate the problem identification, formulation and solution using a range of analytical methods.
4. Analyze and interpret laboratory data relating to behavior of structures and the materials
5. Develop the expectation and capacity to undertake lifelong learning.
6. Determine the coefficient of discharge and coefficient of contraction for loss of head in a sudden contraction, orifice, venturimeter, small orifice, external mouthpiece by variable head method.
7. Determine coefficient of discharge for flow through different notches
8. Justify the Bernoulli equation by calculating the total head and also calculate the impact force on different types of vanes

LIST OF EXPERIMENTS

MOS LAB

1. Direct Tension Test
2. Deflection test on Simple supported Beam & Cantilever Beam
3. Torsion Test
4. Brinell hardness test
5. Compression test on cube
6. Test on springs
7. Impact Strength Test

MOF LAB

1 Calibration of Venturi meter
2 Calibration of Orifice meter
3 Determination of Coefficient of discharge for a small orifice by a constant head method.
4 Determination of Coefficient of discharge for an external mouthpiece by variable head method.
5 Calibration of contracted Triangular Notch
6 Determination of Coefficient of loss of head in a sudden contraction and friction factor.
7 Verification of Bernoulli's equation.
8 Reynolds Experiment

Note: Total 10 experiments should be done. At least 4 from each lab.

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Reference Books:

1. R. K. Bansal (2011), A Textbook of Fluid Mechanics and Hydraulic Machines, 10th edition,Laxmi Publications, New Delhi, India.
2. Ramamrutham. S (2012), Strength of materials, 17th edition, Dhanpat Rai Publications,

COURSE OUTCOMES:

The students should be able to:

1. Analyze the behavior of the ductile materials, which are subjected to tensile loading on UTM and torsional loading of the circular shaft on Torsion testing machine.
2. Investigate and determine the mechanical properties of various materials under tension and compression test on springs, compression test on cube and Charpy and Izod test due to impact loading.
3. Identify, formulate and determine the deflection of simply supported beam and Cantilever beam.
4. Determine the coefficient of discharge and coefficient of contraction for loss of head in a sudden contraction, orifice, venturimeter, small orifice, and external mouthpiece by variable head method
5. Estimate the coefficient of discharge for the flow through different types of notches