

19CE3451- MECHANICS OF SOLIDS LAB

Course Category:	Program Core	Credits:	1.5
Course Type:	Laboratory	Lecture-Tutorial-Practical:	0-0-3
Prerequisites:	19BS1101 – Engineering Mathematics – I 19BS1204 – Applied Physics	Continuous Evaluation:	25
		Semester End Evaluation:	50
		Total Marks:	75

Course Outcomes

Upon successful completion of the course, the student will be able to:

CO1	Assess the tensile strength of steel specimen	K3
CO2	Determine the shear strength of the material	K3
CO3	Verify the theories related to the beams	K3
CO4	Determine the hardness and impact properties of materials	K3
CO5	Determine the rigidity modulus of steel specimen	K3

Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3			3					3			3	3	
CO2	3			3					3			3	3	
CO3	3			3					3			3	3	
CO4	3			3					3			3	3	
Avg.	3			3					3			3	3	

1- Low

2-Medium

3-High

Course Content

Experiment No.1	Stress-strain characteristics of tension members using Universal Testing Machine.	CO1
Experiment No.2	Shear resistance using double shear test.	CO2
Experiment No.3	Determination of Young's modulus by conducting load deflection test on simply supported beam	CO3
Experiment No.4	Determination of Young's modulus by conducting load deflection test on cantilever beam	
Experiment No.5	Determination of Young's modulus by conducting load deflection test on continuous beam	
Experiment No.6	Verification of Maxwell's reciprocal theorem on simply supported beam	
Experiment No.7	Verification of Maxwell's reciprocal theorem on cantilever beam	CO4
Experiment No.8	Determination of hardness of metals using Rockwell's hardness test.	
Experiment No.9	Impact test by using Izod's method	
Experiment No.10	Impact test by using Charpy's method	CO5
Experiment No.11	Modulus of rigidity by conducting torsion test on rods.	
Experiment No.12	Modulus of rigidity by conducting compression test on springs.	

Learning Resources

Text Books & Reference Manuals	3. Mechanics of Solids Lab Manual by Dept. of CE, PVPSIT
	4. IS 1608 (2005): Mechanical testing of metals - Tensile Testing [MTD 3: Mechanical Testing of Metals]
	5. IS 1500 (2005): Method for Brinell Hardness Test for Metallic Materials [MTD 3: Mechanical Testing of Metals]
	6. IS 1501: Method For Vickers Hardness Test for Metallic Materials
	7. BIS IS 1598 : 1977(R2015): method for izod impact test of metals

	8. BIS IS 1757 : 1988(R2009): Method for Charpy impact test (v-notch) for metallic material 9. IS 1717: Metallic Materials - Wire - Simple Torsion Test 10. S. Timoshenko, Strength Of Materials: Elementary Theory and Problems-Vol.I, 2004.
Reference Books	1. R. Subrahmanian, Strength of Materials, 3/e, Oxford University Press, 2016.
e-Resources& other digital material	1. sm-nitk.vlabs.ac.in 2. http://jntuk-coeerd.in/