

20CE3453-MECHANICS OF SOLIDS LAB

Offering Branches	CE		
Course Category:	Professional Core	Credits:	1.5
Course Type:	Laboratory	Lecture-Tutorial-Practical:	0-0-3
Prerequisites:	Nil	Continuous Evaluation:	15
		Semester End Evaluation:	35
		Total Marks:	50

Course Outcomes

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

CO1	Assess the physical properties of materials used for civil engineering structures namely ferrous and non ferrous metals, building making materials.	K3
CO2	Select ferrous and non ferrous metals based on its properties.	K2
CO3	Assess basic properties of materials namely stress in compression, tension, shear, flexure and modulus of elasticity of materials as per relevant codes of practice.	K3
CO4	Assess and select good quality materials based on the specification requirements suitable for a particular type of construction.	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	2	2		2				3	2
CO2	3	3	3	3	3	2	2		2				3	2
CO3	3	3	3	3	3	2	2		2				3	2
CO4	3	3	3	3	3	2	2		2				3	2
Avg.	3	3	3	3	3	2	2		2				3	2

1- Low

2-Medium

3-High

Course Content

Experiment No.1	Stress-strain characteristics of tension members using Universal Testing Machine.	CO1 CO2 CO3 CO4
Experiment No.2	Determination of Shear strength using double shear test.	
Experiment No.3	Determination of Young's modulus by conducting load deflection test on simply supported beam	
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	
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 test method	
Experiment No.11	Determination of 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	<ol style="list-style-type: none"> Mechanics of Solids Lab Manual by Dept. of CE, PVPSIT IS 1608 (2005): Mechanical testing of metals - Tensile Testing [MTD 3: Mechanical Testing of Metals] IS 1500 (2005): Method for Brinell Hardness Test for Metallic Materials [MTD 3: Mechanical Testing of Metals] IS 1501: Method For Vickers Hardness Test for Metallic Materials BIS IS 1598 : 1977(R2015): method for izod impact test of metals
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	6. BIS IS 1757 : 1988(R2009): Method for Charpy impact test (v-notch) for metallic material 7. IS 1717: Metallic Materials - Wire - Simple Torsion Test 4. 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/