

23CE3352-STRENGTH OF MATERIALS LAB

Course Code	23CE3352	Year	II	Semester	I
Course Category	Professional Core	Branch	CIVIL	Course Type	Practical
Credits	1.5	L-T-P	0-0-3	Prerequisites	Engineering Mechanics
Continuous Internal Evaluation	30	Semester End Evaluation	70	Total Marks	100

Course objectives: By the end of this course student will be able to	
1	To determine the tensile strength and yield parameters of mild steel
2	To find out flexural strengths of Steel/Wood specimens and measure deflections
3	To determine the torsion parameters of mild steel bar
4	To determine the hardness numbers, impact and shear strengths of metals
5	To determine the load-deflection parameters for springs
6	To determine the tensile strength and yield parameters of mild steel

Course Outcomes

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

CO1	Conduct tensile strength test and draw stress-strain diagrams for ductile metals	K3
CO2	Perform bending test and determine load-deflection curve of steel/wood	K2
CO3	Able to conduct torsion test and determine torsion parameters	K3
CO4	Perform hardness, impact and shear strength tests and calculate hardness numbers, impact and shear strengths	K3
CO5	Able to conduct tests on closely coiled and open coiled springs and calculate deflections	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
CO5	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	Tension test.	CO1 CO2 CO3 CO4 CO5
Experiment No.2	Bending test on (Steel/Wood) Cantilever beam.	
Experiment No.3	Bending test on simply supported beam	
Experiment No.4	Torsion test.	
Experiment No.5	Hardness test.	
Experiment No.6	Compression test on Open coiled springs	
Experiment No.7	Tension test on Closely coiled springs	
Experiment No.8	Compression test on wood/ concrete	
Experiment No.9	Izod / Charpy Impact test on metals	
Experiment No.10	Shear test on metals	
Experiment No.11	Use of electrical resistance strain gauges.	
Experiment No.12	Modulus of rigidity by conducting compression test on springs	

Learning Resources

Text Books	<ol style="list-style-type: none"> 1. Mechanics of Solids Lab Manual by Dept. of CE, PVPSIT 2. IS 1608 (2005): Mechanical testing of metals - Tensile Testing [MTD 3: Mechanical Testing of Metals] 3. IS 1500 (2005): Method for Brinell Hardness Test for Metallic Materials [MTD 3: Mechanical Testing of Metals] 4. IS 1501: Method For Vickers Hardness Test for Metallic Materials 5. BIS IS 1598: 1977(R2015): method for izod impact test of metals 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 8. 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	<ol style="list-style-type: none"> 1. sm-nitk.vlabs.ac.in 2. http://jntuk-coeerd.in/