

Course Code	Course Name	L-T-P-Credits	Year of Introduction
CE232	MATERIAL TESTING LAB -I	0-0-3-1	2016

Prerequisite : CE201 Mechanics of Solids

Course objectives:

The experimental work involved in this laboratory should make the student understand the fundamental modes of loading of the structures and also make measurements of loads, displacements and strains. Relating these quantities, the student should be able to obtain the strength of the material and stiffness properties of structural elements.

Course Outcomes:

The students will be able to undertake the testing of materials when subjected to different types of loading.

List of Experiments: (10 Experiments mandatory)

1. Tension test on Structural Materials: Mild Steel and Tor steel (HYSD bars) (Universal Testing machine and suitable extensometer)
2. Shear test on mild steel rod (Compression Testing Machine and Shear Shackles)
3. Bending test on mild steel (I sections) (Universal Testing Machine)
4. Torsion test on Mild steel circular bars (Torsion Testing Machine)
5. Torsion test on Steel/Copper/ Aluminum wires
 - a. Using Torsion Pendulum with Central disk
 - b. Using Torsion Pendulum with distributed Mass
6. Impact test
 - a. Izod test (Impact Testing Machine)
 - b. Charpy test (Impact Testing Machine)
7. Hardness test
 - a. Brinell Hardness test (Brinell Hardness Testing Machine)
 - b. Rockwell Hardness test (Rockwell Hardness Testing Machine)
 - c. Vickers Hardness test (Vickers Hardness Testing Machine)
8. Test On Springs
 - a. Open coil (Spring Testing Machine)
 - b. Close coil (Spring Testing Machine)
9. Bending Test on Timber (Universal Testing Machine and dial Gauge)
10. Bend & Rebend test on M S Rods
11. Verification of Clerk Maxwells Theorem
12. Demonstration of Fatigue Test
13. Study/demonstration of Strain Gauges and load cells

Books/Manuals /References:-

1. Testing of Engineering Materials by George E Troxell, Harmer E Davis, G Hauck, McGraw-Hill, New York
2. Testing of Metallic Materials by Prof. A V K Suryanaraya, Prentice Hall, India, Pvt Ltd.
3. Mechanical Behavior of Materials, by N Dowling, Prentice Hall, 1993.

Internal Continuous Evaluation - 100 marks

Record/output (Average) - 60 marks Viva-voce (Average) - 10 marks

Final practical exam – 30 marks