

## 2/4 B.Tech. FOURTH SEMESTER

CE4L2

MATERIAL TESTING LAB

Credits: 2

Lecture: --

Internal assessment: 25 marks

Lab : 3 periods/week

Semester end examination: 50 marks

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### Objectives:

- To understand and perform various tests on steel, iron, wood etc..

### Learning outcomes:

After performing the experiments listed in the syllabus, the students will be able to:

- Measure the tensile and compressive properties of materials like steel, iron etc.
- Determine bending moment of various beams like SSB, Cantilever beam.
- Determine various properties of materials like Hardness Number, Rigidity modulus, Shear modulus etc.
- Verify the theories related to the beams.

### LIST OF EXPERIMENTS:

1. Tension test
2. Bending test on (Steel / Wood) Cantilever beam.
3. Bending test on simple support beam.
4. Torsion test
5. Hardness test
6. Spring test
7. Compression test on wood or iron
8. Impact test
9. Shear test
10. Verification of Maxwell's Reciprocal theorem on beams.
11. Use of electrical resistance strain gauges
12. Continuous beam – deflection test.

### LIST OF MAJOR EQUIPMENTS:

1. UTM for conducting tension test on rods
2. Steel beam for flexure test
3. Wooden beam for flexure test
4. Torsion testing machine
5. Brinnell's / Rock well's hardness testing machine
6. Setup for spring tests
7. Compression testing machine
8. Izod Impact machine
9. Shear testing machine
10. Beam setup for Maxwell's theorem verification.
11. Continuous beam setup
12. Electrical Resistance gauges.