

Course code	Course Name	L-T-P-Credits	Year of Introduction
CE336	STRENGTH OF MATERIALS LAB	0-0-3-1	2016
Prerequisite : SB201 Mechanics of solids			
Course Objectives:			
<ul style="list-style-type: none"> • To study various types of failures occurring in service life of ductile metals. • Provide an environment to enable students to correlate theoretical knowledge gained in the class room with the physical world. • To study the properties of various materials under various working conditions. 			
List of Exercises/ Experiments (Minimum 12 Mandatory)			
<ol style="list-style-type: none"> 1. Tests on Open Coiled Spring <i>Equipment: Spring Testing Machine, Vernier Calliper.</i> 2. Tests on Closed Coiled Spring <i>Equipment: Spring Testing Machine, Vernier Calliper.</i> 3. Bending Test on Wooden Beams Using U. T. M. <i>Equipment: Universal Testing Machine, Deflection Gauges, Measuring Tape.</i> 4. Verification of Clerk Maxwell's Law of Reciprocal Deflection and Determination of Young's Modulus 'E' for Steel. <i>Equipment: Apparatus for verification of Clerk Maxwell's Law of Reciprocal Theorem, Deflection gauges, Weights, Scale, Vernier Calliper.</i> 5. Torsion Pendulum Test for M.S. wires. <i>Equipment: Torsion Pendulum, Cylindrical Weights, Stop Watch.</i> 6. Torsion Pendulum Test for Aluminium Wires. <i>Equipment: Torsion Pendulum, Cylindrical Weights, Stop Watch.</i> 7. Torsion Pendulum Test for Brass Wires. <i>Equipment: Torsion Pendulum, Cylindrical Weights, Stop Watch.</i> 8. Tension Test Using U. T. M. on M. S. Rod. <i>Equipment: Universal Testing Machine, Deflection gauges, Measuring Tape, Vernier Caliper.</i> 9. Tension Test Using U. T. M. on Torsteel rod <i>Equipment: Universal Testing Machine, Deflection gauges, Measuring Tape, Vernier Caliper.</i> 10. Tension Test Using U. T. M. on High Tensile Steel rod. <i>Equipment: Universal Testing Machine, Deflection gauges, Measuring Tape, Vernier Caliper.</i> 11. Compression test on concrete specimen. <i>Equipment: Compression Testing Machine.</i> 12. Compression test on brick. <i>Equipment: Compression Testing Machine.</i> 13. Torsion Test on M. S. Rod. <i>Equipment: Torsion Testing Machine, Vernier Caliper.</i> 14. Shear Test on M.S. Rod. <i>Equipment: Universal Testing Machine, Deflection gauges, Measuring Tape, Vernier Caliper.</i> 15. Impact Test Using Izod Apparatus and Charpy. <i>Equipment: Charpy/ Izod Impact Testing Machine.</i> 16. Impact Test Using Charpy Apparatus <i>Equipment: Charpy/ Izod Impact Testing Machine.</i> 			

17. Hardness Test using Brinell Hardness Apparatus

Equipment: Brinell Hardness Testing Machine.

18. Strut Test.

Equipment: Strut Testing Machine, Vernier Calliper.

Course Outcome:

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

- i. Familiar with the arrangement and conduct of experiments in the Material Testing laboratory environment.
- ii. Able to note down relevant readings and perform calculations while an experiment is in progress thereby correlating theoretical concepts of materials and their practical implications..
- iii. Able to comprehend the factors responsible for variation between theoretical and experimental results pertaining to the domain of Material Science.

Text books:

1. R.K. Bansal; Strength of Materials; Laxmi Publications.
2. Wonsiri Punurai; Mechanics of Materials-Laboratory and Experiments; LAP LAMBERT Academic Publishing.

