

Course code	Course Name	L-T-P-Credits	Year of Introduction
ME235	MACHINE DYNAMICS AND MATERIAL TESTING LAB	0-0-3-1	2016

Prerequisite: ME209 & ME213

Course Objectives:

- To make the students understand the theory of machines through practical exercises.
- To acquire knowledge on material testing principles and use of destructive testing equipment.

Syllabus

List of experiments:

1. Tensile Test on Mild Steel, High carbon Steel and Cast Iron specimens
2. Shear test on MS Rod
3. Torsion test on MS, Aluminium and Brass wire
4. Izod and Charpy Impact tests
5. Hardness test (Rockwell and Brinnell)
6. Compression test on helical springs
7. Microscopic Examination of Steels, Cast Iron, Al, Cu, Zn
8. Thermal Expansion Coefficient using Dial Gauge Dilatometer.
9. Strain Measurement using Rosette strain gauge
10. Test to study the effect of hardening- Improvement in hardness and impact resistance of steels.
11. Tempering - Improvement Mechanical properties Comparison (i) Unhardened specimen (ii) Quenched Specimen and (iii) Quenched and tempered specimen.
12. To study magnetic hysteresis of ferromagnetic material.
13. Universal Governor Apparatus
 - a) Determination of speed and sensitivity of Watt governor
 - b) Determination of speed and sensitivity of Proel governor
 - c) Determination of speed and sensitivity of Porter governor
14. Determination of whirling speed of shaft
15. Cam Study Analysis (Circular cam with roller, knife edge and flat follower)
16. Pendulum Experiment
 - a) Simple pendulum Experiment
 - b) Bifilar suspension Pendulum Experiment
 - c) Compound pendulum Experiment
17. Torsional vibration
 - a) Single rotor Torsional vibration experiment
 - b) Single rotor Torsional vibration experiment
18. Journal bearing experiment

Expected outcome:

- After completion of this programme, students are expected to have knowledge on material testing principles, destructive testing and practical background of machines theory.