



JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY KAKINADA
KAKINADA-533003, Andhra Pradesh, India
DEPARTMENT OF MECHANICAL ENGINEERING

III Year - II Semester		L	T	P	C
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Measurements & Metrology lab					

Course objectives:

- 1) To demonstrate the calibration experiments with different gauges, transducers, thermocouple and temperature detector.
- 2) To demonstrate the calibration experiments with rotameter, seismic apparatus.
- 3) To demonstrate the calibration experiments with vernier calipers, micrometer, height and dial gauges.
- 4) To analyze various machine tools for their alignment.
- 5) To measure angular and taper measurements, straightness, surface roughness.

Note: At least 8 experiments from each lab are to be conducted

MEASUREMENTS LABORATORY

1. Calibration of pressure gauge.
2. Calibration of transducer for temperature measurement.
3. Study and calibration of LVDT transducer for displacement measurement.
4. Calibration of strain gauge.
5. Calibration of thermocouple.
6. Calibration of capacitive transducer.
7. Study and calibration of photo and magnetic speed pickups.
8. Calibration of resistance temperature detector.
9. Study and calibration of a rotameter.
10. Study and use of a seismic pickup for the measurement of vibration amplitude of an engine bed at various loads.

METROLOGY LABORATORY

1. Calibration of vernier calipers, micrometer, vernier height gauge and dial gauges.
2. Measurement of bores by internal micrometers and dial bore indicators.
3. Use of gear tooth vernier caliper for tooth thickness inspection and flange micrometer for checking the chordal thickness of spur gear.
4. Machine tool alignment test on the lathe.
5. Machine tool alignment test on drilling machine.
6. Machine tool alignment test on milling machine.
7. Angle and taper measurements with bevel protractor, Sine bar, rollers and balls.
8. Use of spirit level in finding the straightness of a bed and flatness of a surface.
9. Thread inspection with two wire/ three wire method & tool makers microscope.
10. Surface roughness measurement with roughness measuring instrument.



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Course outcomes: At the end of the course, student will be able to

- 1) Demonstrate the calibration experiments with different gauges, transducers, thermocouple and temperature detector.
- 2) Demonstrate the calibration experiments with rotameter, seismic apparatus.
- 3) Demonstrate the calibration experiments with vernier calipers, micrometer, height and dial gauges.
- 4) Analyze various machine tools for their alignment.
- 5) Measure angular and taper measurements, straightness, surface roughness.