

B.Tech IV Year I Semester

JNTUA COLLEGE OF ENGINEERING (AUTONOMOUS) PULIVENDULA

19AME70 – METROLOGY AND MEASUREMENTS LAB

L	T	P	C
0	0	2	1

Course Objectives: The objectives of the course are to make the students learn about

- To experiment with measuring equipments used for linear and angular measurements.
- To find common types of errors in measurement equipment.
- To experiment with different types of sensors, transducers and strain gauges equipment.
- To make use of thermocouples for measurement of temperature.

List of Experiments

Section A:

1. Measurement of bores by internal micrometers and dial bore indicators.
2. Use of gear teeth vernier calipers and checking the chordal addendum and chordal height of spur gear.
3. Alignment test on the lathe and milling machine using dial indicators
4. Study of Tool makers microscope and its application
5. Angle and taper measurements by Bevel protractor, Sine bars, spirit level etc.
6. Thread measurement by Two wire/Three wire method.
7. Surface roughness measurement by Talysurf instrument.
8. Use of straight edge and spirit level in finding the flatness of surface plate.

Section B:

1. Calibration of Pressure Gauges
2. Study and calibration of Mcleod gauge for low pressure.
3. Calibration of transducer or thermocouple for temperature measurement.
4. Calibration of LVDT transducer for displacement measurement.
5. Calibration of capacitive transducer for angular measurement.
6. Calibration of photo and magnetic speed pickups for the measurement of speed.
7. Study and use of a Seismic pickup for the measurement of vibration amplitude of an engine bed at various loads.

Section C:

1. Experiment on static and dynamic balancing.
2. Experiment on universal governor.
3. Experiment on CAM analysis machine.
4. Study of Inversion of Four Bar Mechanism.

Course Outcomes:

At the end of this Course the student will be able to

- Apply different instruments to measure length, width, depth, bore diameters, internal and external tapers, tool angles, and surface roughness. L3
- Measure effective diameter of thread profile L5
- Conduct different machine alignment tests L6
- Measure temperature, displacement, and pressure L3

nl
 Head
 Mechanical Engineering Department,
 JNTUA College of Engineering,
 PULIVENDULA - 516 390.

