III B.TECH - II SEMESTER
METROLOGY AND INSTRUMENTATION LAB

Course Code: ME6L1 **Credits: 2**
Lecture: - **Internal assessment: 25 marks**
Lab Practice: 3 Periods/week **Semester end examination: 50 marks**

NOTE: MINIMUM OF **6 EXPERIMENTS** FROM **EACH SECTION**

COURSE OBJECTIVES:

- Measurement of linear and angular dimensions
- To perform various alignment tests on machine tools
- Estimation of surface roughness
- Measurement of pressure, flow, speed, displacement and temperature.

COURSE OUTCOMES:

At the end of course the students will be able to:

1. Demonstrate the use of instruments for measuring linear (internal and external), angular dimensions and surface roughness.
2. Perform alignment tests on various machine tools.
3. Demonstrate the use of instruments for measuring pressure, flow, speed, displacement and temperature
4. Calibrate the Bourdon tube pressure gauge

Pre-Requisites: Engineering Metrology, Mechanical measurements

METROLOGY LAB

1. Measurement of lengths, heights, diameters by Vernier calipers, Micrometers etc.
2. Measurement of bores by internal micrometers and dial bore indicators
3. Use of gear tooth vernier calipers for checking the chordal thickness of spur gear.
4. Machine tool alignment test on the lathe.
5. Machine tool alignment test milling machine.
6. Angle and taper measurement by bevel protractor and Sine bar.
7. Thread measurement by two wire, three wire method and tool makers microscope.
8. Surface roughness measurement by Talysurf.
9. Measurement of internal and external taper by using rollers and spheres

INSTRUMENTATION LAB

1. Calibration of pressure gauge using dead weight pressure gauge tester.
2. Pressure measurement using strain gauge setup.
3. Temperature measurement using resistance temperature detector/ thermocouple/ thermistor.
4. Displacement measurement using LVDT.
5. Measurement of angular displacement using capacitance transducer.
6. Speed measurement using photo electric/ magnetic speed pickup transducer.
7. Flow measurement using rotameter.
8. Low pressure measurement using McLeod gauge.