

Metrology & Instrumentation Lab

Objective: The Metrology and instrumentation Laboratory course is designed for measuring and gauging instruments for inspection of precision linear, geometric forms, angular and surface finish measurements. The student can learn the measurement and calibration of instruments. Students will understand the machine tool alignment test. Instrumentation lab introduces the students with the theory and methods for conducting experimental work in the laboratory and calibration of various instruments for measuring pressure, temperature, displacement, speed.



Sections Handled: III/I-A, III/I-B

Major Equipment Details:

Sl.No	Equipment Name	Qty
1	Vernier Caliper, Size: 150mm	1
2	Vernier Caliper, Size:0-200mm	4
3	Vernier Caliper, Size:0-300mm	1
4	Vernier Depth Gauge, Size: 12Inch / 300 mm	1
5	Vernier height gauge, Size:12"/300 mm	1
6	Outside Micrometer, Size:0-25 mm	1
7	Outside Micrometer, Size:25-50 mm,	1
8	Outside Micrometer, Size:50-75 mm,	1
9	Inside Micrometer, Size: 5-25 mm	1
10	Gear Tooth Vernier Calliper	1
11	Gear Tooth Micrometer	1
12	Dial gauge, L.C: 0.01mm, Range:10mm	6
13	Dial gauge, L.C: 0.001mm, Range:1mm	2
14	Lever Type Dial Teat indicator	1
15	Depth Micrometer	1
16	Bore Gauge, Size: 18-35	1
17	Bore Gauge, Size: 35-60	1
18	Bevel Protractor	1

19	Sine Bar, Size: 200mm	1
20	Spirit Level, Size:150mm	1
21	Spirit Level Size:200mm	1
22	Spirit Level, Size:300mm	1
23	Screw thread Micrometer, Size:0-25 mm	1
24	Slip Gauges, 83Pcs	1
25	Magnetic Base Model 7011S	1
26	Magnetic Base, IMB-106	1
27	Micrometer Stand	1
28	Slip Gauges, 83Pcs	2
29	Sine Bar, Size: 200mm	1
30	Three wire set with micrometer holder	1
31	Pressure Calibration: Dead weight pressure gauge tester	1
32	Temp Sensor, J Thermocouple & Thermistor	1
33	LVDT Trainer	1
34	Strain gauge Trainer	1
35	Thermocouple J/K type sensor, RTD	1
36	Angular displacement measurement	1
37	Speed measurement using magnetic pickup/Optical Pickup	1
38	Resistance Temperature Detector	1
39	Rotameter	1

Faculty In charge with qualification: M. Prithvi Raj, M.Tech

Lab Technician name with qualification: K. Suresh, DME

Experiment list as per curriculum:

1. Measurement of lengths, height's, diameters by vernier calipers, micrometers etc.
2. (a) Measurement of bores by dial bore indicators.
(b) Measurement of bores by internal micrometers.
3. Use of gear tooth vernier calipers and checking the chordal thickness of spur gear.

4. Machine tool alignment test on the lathe.
5. Machine tool alignment test on milling machine.
6. (a) Angle and taper Measurement by bevel protractor.
(b) Taper angle Measurement by sine bar.
7. Thread Measurement by two wire&three wire method.
8. Finding the flatness of a surface plate using spirit level.
9. Calibration of pressure gauge
10. Study and calibration of LVDT for displacement Measurement.
11. Calibration of thermocouple & RTD for temperature measurement
12. Calibration of Capacitive transducer for angular measurement.
13. Measurement of Speed.
14. Calibration of Rota meter for Flow measurement.
15. Calibration of strain gauge

Experiment list beyond the curriculum

- 1.
- 2.
- 3.