

## **METROLOGY AND MACHINE TOOLS LABORATORY**

This laboratory is aimed at creating awareness on various mechanical measuring instruments providing an introduction to the Know-how of common processes used in industries for manufacturing parts by removal of material in a controlled manner. Auxiliary methods for machining to desired accuracy is covered. The emphasis throughout the laboratory course will be on understanding the basic features of the processes rather than details of constructions of machine, or common practices in manufacturing or acquiring skill in the operation of machines. Evidently, acquaintance with the machine is desirable and the laboratory sessions will provide adequate opportunity for this.



## List of experiments

### SECTION A:

1. Measurement of lengths, heights, diameters by vernier calipers micrometer etc.
2. Measurement of bores by internal micrometers and dial bore indicators.
3. Use of gear, teeth, vernier calipers and dial bore indicators.
4. Machine tool “alignment test on the lathe.
5. Machine tool alignment test on milling machine.
6. Tool makers microscope and its application.
7. Angle and taper measurements by Bevel protractor, sine bars, etc.
8. Use of spirit level in finding the flatness of surface plate.
9. Thread measurement by two wire/Three wire method or Tool makers microscope.
10. Surface roughness measurement by Taly Surf.
11. Surface wear Resistances Test using Electro spark coating Device.

### SECTION B:

1. Introduction of general purpose machines-Lathe, Drilling machine, Milling machine, Shaper,
2. Planing machine, slotting machine, Cylindrical Grinder surface grinder and tool and cutter grinder,
3. Step turning and taper turning on lathe machine.
4. Thread cutting and knurling on lathe machine.
5. Drilling and Tapping
6. Shaping and Planing
7. Slotting
8. Milling
9. Cylindrical surface Grinding
10. Grinding of Tool angles.