

METROLOGY

Module-I

(11 Hours)

Metrology: Need of Inspection, Precision and accuracy, Accuracy and cost, Sources of error, Types of error, and Geometry of form on shape. Line standard, end standard, limits, fits, tolerances-Hole & shaft basis system, Interchangeability, selective assembly, ISO system for limits & fits, Limit gauges-Snap, plug, ring, taper, position gauges-Gauge design, Taylor's principle. Wear allowance, Screw allowance Screw thread gauge, Thread pitch gauge.

Module-II

(11 Hours)

Comparators- Characteristics, Relative Advantages of various types of comparators- Mechanical, optical, Pneumatic, Fluid displacement type, Measurement by light wave Interference optical flat.

Measurement of straightness- Autocollimator flatness testing measurement of circularity-types of irregularities. Angular measurement-measurement of angle of tapered hole.

Module-III

(13 Hours)

Surface Measurements- Roughness and waviness, Surface texture, cut off length, RMS & CLA values, Surface roughness measuring instruments, Principle of working.

Metrology of screw thread- Errors in threads, measurement of element of threads, 2-wire & 3-wire methods, Measurement & testing of gears-Measurement of error, rolling test, gear tooth calliper, base tangent comparator.

Non destructive testing

TEXT BOOK(S):

1. Engineering Metrology- R.K. Jain
2. Production Technology- P.C. Sharma

REFERENCE(S):

1. Engineering Dimensional Metrology- Miller, Edward Arnold pub.
2. Precision Engineering in Metrology- R.L. Murty, New Age Int.