



Department of Mechatronics Engineering

Course Name: Metrology Laboratory

Class: TE Mechatronics Engineering

Course Code: 317546 (2019 Course)

Course Objectives:

1. To develop necessary skills for calibration and testing of instruments
2. To apply fundamentals of measuring methods by collecting data ,analysis and interpretation
3. Apply knowledge of Designing limiting gauges
4. Apply knowledge of Electronic/Electrical measuring instruments

Course Outcome:

1. Evaluate causes of errors in vernier calipers, micrometers by performing experiments in standard metrological conditions, noting deviations at actual and by plotting cause and effect diagram, to reduce uncertainty in measurement.
2. Analyze strain measurement parameters by taking modulus of elasticity in consideration to acknowledge its usage in failure detection and force variations.
3. Examine surface Textures, surface finish using equipment's like Talysurf and analyze surface finish requirements of metrological equipment's like gauges, jaws of vernier calipers, micrometers, magnifying glasses of height gauge and more, to optimize surface finish accuracy requirements and cost of measurement.
4. Weigh dimensional accuracy using Comparator and limit gauges and appraise their usage in actual measurement or comparison with standards set to reduce measurement lead time.
5. Test Flow rate, speed and temperature measurements and their effect on performance in machines and mechanisms like hydraulic or pneumatic trainers, lathe machine etc to increase repeatability and reproducibility.