Title: Basics of Measurement and Instrumentation

Eligibility: Bachelor's degree in any Faculty

Objectives: To create understanding and importance of Measurement

To make students familiar with different instruments

To make students aware of Instrumentation and to read specification

To create manpower related to **Industrial Safety**

Course Structure: The course is equivalent to 4 credits . The course can be run in any of the four semesters.

Measurements and Measuring Instruments (2 credit)

CategoriesofMeasurement,Accuracy,Precision,Resolution,Repeatability,reproducibility,hyteresis,sensitivity,range,Specification,Controls ,Block diagram, Principle of operation of Multimeter, UV-Vis FTIR spectrometer, Optical fiber Receiver-Transmitter, Lock in Amplifier,cyclic voltameter, CRO, Temperature controller, Magnetic field measurements, strain Measurement ,Pressure Guages ,Thickness measurement – gravimetric method, fitzeau fringe method, tally step method etc,
Adhesion – contact angle, tape, scratch, strain / stress methods.
and or similar topics

Comsol (1 credits)

Comsol desktop, Structural analysis ,Parameters, Functions, Varaibles and coupling, Constants and parameters, Material properties and material libraries, Adding Meshes and Physics, Parametric Sweeps, Parallel computing, Building a geometry, and Mouse Short cut, File format

Labveiw (1 credits)

Introduction to Windows API, Introduction to Labveiw,"G'' language concept, Introduction to VI, Sample VI making and execution on PC.

Refrences:

1.Measurement Systems Application and Design   Ernest O. Dobelin McGraw-Hill
2.Instrumental Methods of Analysis HobarthWillard ,Lynne Merritt ,John Dean , Frank
          Settle
3.Instant notes in Biochemistry   B. D. Hames, N. M. Hooper, J. D.Houghton
4.Principles of Biochemistry   Albert L.Lehninger, David Lee Nelson,Michael M. Cox

Methodology: Lectures supplemented with case studies that may include visits.

Assessment: Final assessment by written and group discussion. Skill based assessment will be as per the case study.