#### ELECTRONIC MEASUREMENT AND INSTRUMENTATION Code: EC605C Contact: 3L Credits: 3

Module I

#### Module I [6] Basic Measurement Concepts:

Measurement systems – Static and Dynamic Characteristics – Units and Standards of measurements, –errors analysis, – moving iron meters, dynamometer, wattmeter– multimeter, – True rms meters– Bridge measurements, Wheatstone Bridge, Kelvin, Wein, Maxwell, Hay, Schering and Anderson Bridges.

# Module II [7]

# **Basic Measurement Concepts:**

Electronic Multimeter

Current measurement with analog electronic instruments. Chopper stabilized amplifier for measurement of very low voltage and currents.

Cathode Ray Oscilloscopes- Block Schematic, Principles and applications. Dual Trace and Dual Beam Oscilloscopes, Digital Storage Oscilloscopes

# Module III [7]

### **Signal Generator and Analysis**

Function Generators- RF Signal Generators- Sweep Generators – Frequency Synthesizer-Wave Analyzer-Harmonic Distortion Analyzer – Spectrum Analyzer

## Module IV [7]

## **Digital Instruments**

Comparison of analog & digital techniques- digital voltmeter- mutlimeter – frequency countersmeasurement of frequency and time interval – extension of frequency range- measurement errors.

### Module V [7]

# **Data Acquisition Systems**

Elements of digital data acquisition system- interfacing of transducers –multiplexing – computer controlled instrumentation : IEEE 488 Bos. Optical Power Measurement, Optical Time Domain Reflectometer.

# Books:

9. Modern Electronic Instrumentation & Measurement Techniques – Albert D. Helfrick & William D. Copper, Prentice Hall of India, 2003

10. Elements of Electornics Instrumentation & Measurement, Pearson Education 2003

11. Measurement System- Application & Design – Ernest O.Doeblin, Tata McGraw Hill 2004