Semester III

Course Code: EITG - 201 **Course Title: General Instrumentation**		
Number of Credits: 03	**Total Hours: 42**	**Total Marks: 75**
Prerequisites for the course		
Student should have basic knowledge of electronics and different instruments		
Objectives of Course		
This course is intended to provide the basic understanding of the working principle behind any electronics measuring instruments. Students will be made familiar with the importance of instrumentation. He/ She will learn how to acquire the signal and process those signals.		
Course Content		
Unit I	**Plan and perform routine trade activities**	**5 Hours**
Protective equipment: Hard hat, goggles, face, Ear plug & Ear muffs, Hand (gloves), foot (boots with sole), Personal Breathing Apparatus, hand and power tools, Trade specific hand and power tools, Manufacturer instructions, mounting hardware, Location for installation of mounting hardware.		
Unit II	**Scope of Instrumentation**	**5 Hours**
Scope of Instrumentation, block diagram of measurement system, calibration, secondary and working standards, metric system base and supplementary units, Characteristics of instruments.		
Unit III	**Signal conditioning and display**	**10 Hours**
Single ended and differential amplifier instrumentation amplifiers, block diagram of AC signal conditioning and DC signal conditioning, sampling circuits, analog indicators, alphanumeric devices: 7-seg and dot array.		
Unit IV	**Data acquisition system and computer interfaces**	**10 Hours**
Data acquisition system, pre-amplification and filtering, single channel and multichannel data acquisition system, multiplexing, sample and hold, A/D and D/A converter, data logger, Interfaces: RS-232, GPIB, USB.		
Unit V	**Control System**	**12 Hours**
Basic idea of feedback control systems (open and control), basics of P, PI, PD, PID controllers, ON/OFF pneumatic control systems, ON/OFF electric controllers.		
Pedagogy		
Lectures/Tutorial/Assignments/		
Course Outcome		
On completion of this course student is expected to gain good knowledge of instrumentation. Student will understand the importance of data acquisition system control system.		
References/Readings		
1. Electronics instrumentation, H.S. Kalsi 2. Electronics measurements and instrumentation, R. S. Sedha 3. R.K.Jain, “Mechanical & Industrial Measurements”, Khanna Publishers, 11th Edition, 2004. 4. Ernest O. Doeblin, Dhanish. N. Manik, “Measurement Systems Application & Design”, TMH, 5th Edition, 2004. 5. Electrical and Electronics Measurements and Instrumentation by PrithwirajPurakait.		