

Gujarat Technological University, Ahmedabad

Bridge Course

Course Duration: 6 weeks

ELEMENTS OF ENGINEERS

Overview:

Nowadays most of the systems are having base of Electronics, Instrumentation and their control. So for the engineers, it is must to understand the basic concept and applications of related Electronics, Instrumentation and Communication devices. The syllabus is designed to introduce the students to get them familiarize with basic electronic devices and measurement tools. The course will help the students to know the trends in different areas of Electronics and Instrumentation.

Course Objectives:

- To familiarize and identification of the basic electronics components like Diodes, LED, Opto-Electronic Devices, Transistors and FET.
- To give basic idea about measuring instrument like Ammeter, Voltmeter, Oscilloscope and elementary knowledge of analog ICs.
- To introduce the various IC technologies and their manufacturing & different types of microprocessor.
- To demonstrate the different types of communication technique and their application
- To familiarize with basic PCB Design technology and Manufacturing Process

Course Outcomes:-

- At the end of this topic student will be able to identify the various electronics devices and their application in electronic circuit
- At the end of this topic student will be able to understand the working and usage of operational amplifier and measuring instrument like Ammeter, Voltmeter and Oscilloscope.
- After completion of this topic students will be familiar with the various IC technologies and their manufacturing & students will be able to explain about types of microprocessor.
- Students will be able to distinguish between analog and digital communication along with examples of communication systems.
- Students will be familiarized with basic PCB Design technology and Manufacturing Process having small scale application.

Syllabus:

Sr. No.	Content	Hours
1.	Introduction to Electronics: Introduction to Semiconductor Devices and its application (Diodes, LED, Opto-Electronic Devices, Transistors and FET)	1
2.	Introduction to Instrumentation: Introduction to Bridges, Transducers, Operational amplifiers, Measuring instruments (Ammeter, Voltmeter and Oscilloscope)	1
3.	Introduction to Integrated Circuits (IC) and VLSI: Types of integrated Circuit, Types of IC Package, Introduction to small-scale, Medium-scale, Large-scale and Very large scale Integration, Introduction to microprocessors.	1
4.	Introduction to Analog and Digital Communication: Advantages and Disadvantages of Analog and Digital Communication, Example of communication in day to day life (Radio, Satellite Communication, Mobile Communication, Optical communication, Television, Audio & Video and Microwave).	2
5.	PCB Design and Manufacturing Process: Types of PCB, Photolithographic technique, concept of etching, drilling and soldering.	1