

Course No:	Course Name	L-T-P Credits	Year of Introduction
EC100	BASICS OF ELECTRONICS ENGINEERING	2-1-0-3	2016

### Course Objectives

- 1) To get basic idea about types, specification and common values of passive and active components.
- 2) To familiarize the working of diodes, transistors, MOSFETS and integrated circuits.
- 3) To understand the working of rectifiers, amplifiers and oscillators.
- 4) To get a basic idea about measuring instruments
- 5) To get a fundamental idea of basic communication systems and entertainment electronics

### Syllabus

Evolution and Impact of Electronics in industries and in society, Familiarization of Resistors, Capacitors, Inductors, Transformers and Electro mechanical components, PN Junction diode: Structure, Principle of operation, Zener diode, Photo diode, LED, Solar cell, Bipolar Junction Transistors: Structure, Principle of operation, characteristics, Rectifiers and power supplies: Half wave and full wave rectifier, capacitor filter, zener voltage regulator, Amplifiers and Oscillators: common emitter amplifier, feedback, oscillators, RC phase shift oscillator, Analogue Integrated circuits: operational amplifier, inverting and non-inverting amplifier, Electronic Instrumentation: digital multimeter, digital storage oscilloscope, function generator, Radio communication: principle of AM & FM, Super heterodyne receiver, Satellite communication: geo-stationary satellite system, Mobile communication: cellular communications, Optical communication: system, principle of light transmission through fiber, Entertainment Electronics: Cable TV, CCTV system.

### Expected Outcome

Student can identify the active and passive electronic components. Student can setup simple circuits using diodes and transistors. Student will get fundamental idea about basic communication systems and entertainment electronics.

### Text Books:

- Bell, D. A., Electronic Devices and Circuits, Oxford University Press
- Tomasy, W., Advanced Electronic Communication system, PHI Publishers

### References Books:

- Boylested, R. L. and Nashelsky, L., Electronic Devices and Circuit Theory, Pearson Education

- Frenzel, L. E., Principles of Electronic Communication Systems, Mc Graw Hill
- Kennedy, G. and Davis, B., Electronic Communication Systems, Mc Graw Hill
- Rajendra Prasad, Fundamentals of Electronic Engineering, Cengage Learning

**Course Plan**

Module	Contents	Hours	Sem. Marks
<b>I</b>	Evolution of Electronics, Impact of Electronics in industry and in society.	1	10%
	Resistors, Capacitors: types, specifications. Standard values, marking, colour coding.	3	
	Inductors and Transformers: types, specifications, Principle of working.	2	
	Electro mechanical components: relays and contactors.	1	
<b>II</b>	PN Junction diode: Intrinsic and extrinsic semiconductors, Principle of operation, V-I characteristics, principle of working of Zener diode, Photo diode, LED and Solar cell.	4	20%
	Bipolar Junction Transistors: PNP and NPN structures, Principle of operation, input and output characteristics of common emitter configuration (nnp only).	3	
<b>FIRST INTERNAL EXAM</b>			
<b>III</b>	Rectifiers and power supplies: Block diagram description of a dc power supply ,Half wave and full wave (including bridge) rectifier, capacitor filter, working of simple zener voltage regulator.	4	15%
	Amplifiers and Oscillators: Circuit diagram and working of common emitter amplifier, Block diagram of Public Address system, concepts of feedback, working principles of oscillators, circuit diagram & working of RC phase shift oscillator.	4	
<b>IV</b>	Analogue Integrated circuits: Functional block diagram of operational amplifier, ideal operational amplifier, inverting and non-inverting Amplifier.	3	15%
	Digital ICs: Logic Gates.	1	

	Electronic Instrumentation: Principle and block diagram of digital multimeter, digital storage oscilloscope, and function generator.	2	
<b>SECOND INTERNAL EXAM</b>			
<b>V</b>	Radio communication: principle of AM & FM, frequency bands used for various communication systems, block diagram of super heterodyne receiver.	3	20%
	Satellite communication: concept of geostationary Satellite system.	2	
<b>VI</b>	Mobile communication: basic principles of cellular communications, concepts of cells, frequency reuse.	2	20%
	Optical communication: block diagram of the optical communication system, principle of light transmission through fiber, advantages of optical communication systems.	2	
	Entertainment Electronics Technology: Basic principles and block diagram of cable TV, CCTV, DTH system.	2	
<b>END SEMESTER EXAM</b>			

Note: Analysis is not required in this course.