EC – 10001

Basic Electronics

2 Credits

Course Requirements

CWS: 30 MTE: 20 ETE: 50

- ❑ Midterm Exams
- ❑ End Term Exam
- ❑ Continuous Assessment
  - HW assignments (3 or 4 Nos)
    - Based on each Module
  - Quizzes (2 Nos)
    - Based on HW questions and MCQ (20-30 minutes long)
  - Project based Activity on Subject

Course Objective

To introduce the fundamental concepts on electronic devices and circuits for various engineering applications.

Course Outcome

CO1: To understand the properties of semiconductors.

CO2: To analyze different types of diodes, study of simple electronic circuits using diodes.

CO3: Different types of transistor , its configurations. Application of transistor in amplifier and switch.

CO4: The ability to know about OP-AMP & its applications.

CO5: To understand different types of digital gates. Its application in digital circuits.

CO6: Able to exposure the importance of electronic devices and system.

SL No	UNIT NAME	SUBJECT UNIT
1	**Semiconductor**	Introduction to Energy band concept of materials, difference between metal, insulator and semiconductor. Intrinsic and extrinsic semiconductors (n-type & p-type). Current conduction mechanism in Semiconductor
	Junction Diode	Introduction, Basic Definition, symbol and operation of p-n junction diode. Half-wave, full-wave rectifiers with filters. Breakdown mechanisms and Zener diode
	Transistor	Transistor constructions, operations and their characteristics. Transistor Biasing, load line analysis. Concept of JFET and MOSFET.
		MID SEMESTER
2	**Operational Amplifiers**	Operational Amplifier (Op-amp) and application: - Introduction and its Characteristics . Application of Op-Amp.
3.	**Digital Electronics**	Introduction, Different number systems and its conversions, Logic gates and truth tables of OR, AND, NAND, EX-OR. Combinational circuit and Sequential circuit.
4	**Miscellaneous Electronic Devices And Communication**	SCR, opto-electronic devices and fiber techniques, Introduction and describing sensor performance Fundamentals of Analog communication techniques (AM, FM)

Text Books :

Sl. No.	Name of Books / Authors	
1.	Electronics Fundamentals and Applications-D. Chattopadhyay, P C Rakshit	
2.	Electronic Devices & Circuits- R. L. Boylestad- 10th Edition (Pearson).	
3.	Integrated Electronics – J. Millman & Halkias(TMH)	
4.	Integrated electronics: Analog and digital circuits and Systems – Jacob Millman, Christos C. Halkias & Chetan D. Parikh(TMH)	

Online Course Material:

www.nptel.ac.in