

Basic Electronics Engineering 2-0-0

For 1st Semester Code (RBL1B002)

Module 01 : (6Hours)

Introduction to Semiconductors, Junction Diode: Principle of Diodes, V-I characteristics of junction diode, AC and DC Resistance of Diode, Diode Current Equation, Equivalent circuit of Diode, Breakdown Mechanism, Zener Diode, Rectifier circuit, Clipper and Clamper, Avalanche Diode Bipolar Junction Transistor: Transistor Operation, Current Equation in n-p-n & amplifier; p-n-p transistors, CB,CE,CC Configurations and their Characteristics, Load line Analysis, DC Biasing (Fixed bias and Voltage Divider), Introduction to Amplifiers.

Module 02 : (6 Hours)

Field Effect Transistor: JFET-types, Operations and their Characteristics, MOSFETs- types, Operations and their Characteristics
CMOS: Brief Introduction to CMOS, Principle of operation of Digital Inverters, VTC Characteristics,

Module 03: (5 Hours)

Operational Amplifiers: The Ideal Op Amp, Inverting and Non – Inverting configurations, Equivalent Circuit model, Op amp application in Integration, Differentiation and Summing Circuits.

Module 04 : (5 Hours)

Digital Electronic Principles: Introduction, Binary digits, Logic levels and Digital waveforms, Introduction to basic Logic operation, Number system, Decimal numbers, Binary numbers, Decimal-to-Binary conversion, Simple binary arithmetic, Logic Gates, Boolean algebra and Combinational Logic Circuits: The inverter, The AND, OR, NAND NOR, Exclusive-OR and Exclusive-NOR gate, Boolean operations and expressions, Laws and Rules of Boolean algebra, De Morgan's theorem, Boolean analysis of logic circuits, Standard forms of Boolean expressions, Boolean expression and truth table. Basic combinational logic circuits, Implementation of combinational logic, the universal properties of NAND and NOR gates, Basic adders.

Text book:

1. Electronic Devices Circuit Theory - by Rober L. Boylestad 11th Edition, Pearson Publication, 2014
2. Microelectronic Circuits by A. S. Sedra and Kenneth C. Smith 7th Edition, Oxford University Press. 2017
3. Digital Design by M. Morris Mano, 5th Edition, Pearson Publication, 2016.