GOVT. POLYTECHNIC MAYURBHANJ
LESSON PLAN

Discipline : Mechatronics	Semester: 3rd	Name of the Teaching Faculty : MANOJ KUMAR PRADHAN
Subject :		Electronics Devices and Circuits
No. of Days / per week class allotted : 03		Semester From date : 01.07.2026 To Date : 05.11.2026

MONTH	Week	Day	UNIT	TOPICS
July	Week 1	5	1	Introduction: Definition of electronics, Branch of electronics,Importance of electronics in modern society
	Week 2	2	1	Basic electronics components and their application in the field of mechatronics engineering
	Week 2	3	1	Basic concept of semiconductors, atomic structure, intrinsic and extrinsic semiconductor
	Week 2	5	1	N type and P type semi-conductors, Energy band in conductors, semiconductors and insulators
	Week 3	2	1	Resistor, Types, characteristics and colour code, Combination of resistors, application of resistors
	Week 3	3	1	Capacitor: Types, characteristics and colour code, Combination of capacitors, application of capacitors
	Week 4	2	1	Inductor: Types, characteristics and colour code, Combination of inductor and application of inductor
	Week 4	3	1	RC and LC Filter, their types and applications
	Week 4	5	-	**Semiconductor Diode: Introduction to PN junction diode: Basic structure, forward and reverse biasing**
	Week 5	2	2	Working principle and VI characteristics of PN junction diode
	Week 5	3	2	Types of diode and its applications: Zener diode, Photo diode
	Week 5	5	2	Types of diode and its applications: Light emitting Diode
August	Week 2	2	2	Types of diode and its applications: Varactor diode
	Week 2	3		**Monthly Test**
	Week 2	5	2	Zener diode: Basic construction, operational principle, V-I characteristics
	Week 3	2	2	Zener diode as a voltage regulator
	Week 3	3	2	Application of diode: Rectifier and types of rectifier (half wave, center tapped and bridge rectifier)
	Week 3	5	-	DC power supply with filter
	Week 4	2	3	**Bipolar Junction Transistors: Physical structure and modes of operation, Types of BJT**
	Week 4	3	3	Transistor configuration (CE, CB, CC); graphical representation of transistor characteristics
	Week 4	5	3	Current gain and their relation; Comparison between three configurations
	Week 5	2	3	Graphical load line analysis and Q-point, Biasing method and stabilization of operating point
	Week 5	3	3	Transistor as an amplifier and switch
	Week 6	2	3	Multistage transistor amplifier: concept and applications
September	Week 1	3	4	**Field Effect Transistor: Introduction to FET, Classification of FET (JFET and MOSFET)**
	Week 1	5	4	MOSFET: construction, working and characteristics of n-channel D-MOSFET
	Week 2	2	4	MOSFET: working and characteristics of EMOSFET
	Week 2	3	4	**Internal Assessment 1**
	Week 2	5	4	Comparison between BJT and FET, MOSFET biasing
	Week 3	5	4	MOSFET applications
	Week 4	2	5	MOSFET applications (continued)
	Week 4	3	-	**Output Stages and Power Amplifiers: Classification of Output Stages, Class A output stages**
	Week 4	5	5	Class B output stages, Class AB Output Stages
	Week 5	2	5	Class C output stages, tuned amplifiers, Heat Sink
	Week 5	3	6	**Power Supplies and Voltage Regulators: Unregulated Power Supply and Regulated Power Supply**
October	Week 1	5	6	Linear Voltage Regulator: Zener Voltage Regulator; Transistor series regulator
	Week 2	2	6	Protection of power supplies against overload and short circuit: basic circuit, working principle
	Week 2	3	6	Integrated circuit voltage regulator: Fixed (eg. IC 78XX and 79XXseries),variable (eg. LM 317)
	Week 2	5	6	Introduction to Switched Mode Power Supply (SMPS) and UPS
	Week 3	2	6	**Power Electronic Devices: SCR - Construction of SCR, Two transistor analogy of SCR**
	Week 3	3	6	Types, working and characteristics of SCR, SCR mounting and cooling
	Week 3	5	-	Types of Thyristors: LASCR, SCS, GTO, UJT
	Week 4	5	6	Types of Thyristors: PUT, DIAC, TRIAC, IGBT;
	Week 5	2	6	Types of Thyristors: Thyristor family devices - Symbol and construction; Operating principle, V-I characteristics;
	Week 5	3	6	Protection circuits - Over-voltage, Over-current, Snubber, Crowbar
	Week 5	5	6	**Internal Assessment 2**
November	Week 1	2	6	**Revision**
	Week 1	3	6	**Revision**
	Week 1	5		**Revision**

Total No of Classes - 46