

DISCIPLINE		SEMESTER	NAME OF THE TEACHING FACULTY	
ELECTRONICS & TELE-COMMUNICATION		5TH	MISS.SINDHUJA PANIGRAHI(GF)	
SUBJECT:PE&PLC(TH-5)		NO. OF DAYS PER WEEK CLASS ALLOTTED : 04	SEMESTER FROM 14/07/2025 TO 15/11/2025	
			NO. OF WEEKS : 15 NOS.	
WEEKS	CLASS DAYS	THEORY TOPICS		TEACHING AIDS
		UNDERSTAND THE CONSTRUCTION & WORKING OF POWER ELECTRONICS DEVICES		
1ST WEEK	1ST	Introduction to Power Electronics & Construction, Operation, V-I characteristics & application of power diode		White board, marker
	2ND	Construction, Operation, V-I characteristics & application of SCR		Smart Class (Interactive Panel)
	3RD	Construction, Operation, V-I characteristics & application of DIAC, TRIAC		White board, marker
	4TH	Construction, Operation, V-I characteristics & application of Power MOSFET, GTO		Smart Class (Interactive Panel)
2ND WEEK	1ST	Construction, Operation, V-I characteristics & application of IGBT		White board, marker
	2ND	Two transistor analogy of SCR, Gate characteristics of SCR		White board, marker
	3RD	Switching characteristic of SCR during turn on of SCR		White board, marker
	4TH	Switching characteristic of SCR during turn off of SCR		White board, marker
3RD WEEK	1ST	Turn on methods of SCR, Turn off methods of SCR (Line commutation and Forced commutation)		White board, marker
	2ND	Load Commutation, Resonant pulse commutation		White board, marker
	3RD	Voltage and Current ratings of SCR		White board, marker
	4TH	Protection of SCR( Over voltage protection, Over current protection, Gate protection)		White board, marker
4TH WEEK	1ST	Firing Circuits, General layout diagram of firing circuit		White board, marker
	2ND	R firing circuits		White board, marker
	3RD	R-C firing circuit		White board, marker
	4TH	UJT pulse trigger circuit		White board, marker
5TH WEEK	1ST	Synchronous triggering (Ramp Triggering )		White board, marker
	2ND	Design of Snubber Circuits		White board, marker
		UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS & CHOPPERS		
	3RD	Understand the working of Converters-Controlled rectifiers Techniques(Phase Angle, Extinction Angle control)		White board, marker
	4TH	Single quadrant semi converter, two quadrant full converter and dual Converter		White board, marker
6TH WEEK	1ST	Working of single-phase half wave controlled converter with Resistive loads		White board, marker
	2ND	Working of single-phase half wave controlled converter with and R-L loads		White board, marker
	3RD	Working of single-phase half wave controlled converter with and R-L loads & Understand need of freewheeling diode		White board, marker
	4TH	Working of single phase fully controlled converter with resistive and R- L loads		White board, marker
	1ST	Working of three-phase half wave controlled converter with Resistive load		White board, marker

7TH WEEK	2ND	Working of three phase fully controlled converter with resistive load	White board, marker
	3RD	Working of single phase AC regulator	White board, marker
	4TH	Working principle of step up & step down chopper	White board, marker
8TH WEEK	1ST	Control modes of chopper, Working principle of CLASS-A, CLASS-B Chopper	Smart Class (Interactive Panel)
	2ND	Working principle of CLASS-C & CLASS-D Chopper	Smart Class (Interactive Panel)
	3RD	Working principle of CLASS-E Chopper & Operation of chopper in all four quadrants.	Smart Class (Interactive Panel)
		UNDERSTAND THE INVERTERS AND CYCLO-CONVERTERS	
	4TH	Understand the basics of inverter, Classify inverters	White board, marker
9TH WEEK	1ST	Explain the working of series inverter	White board, marker
	2ND	Explain the working of parallel inverter	White board, marker
	3RD	Explain the working of single-phase bridge inverter	White board, marker
	4TH	Explain the basic principle of Cyclo-converter	White board, marker
10TH WEEK	1ST	Explain the working of single-phase step up & step down Cyclo-converter	White board, marker
	2ND	Applications of Cyclo-converter	White board, marker
		UNDERSTAND APPLICATIONS OF POWER ELECTRONIC CIRCUITS	
	3RD	Understand application of power electronics circuit	White board, marker
	4TH	List applications of power electronic circuits	White board, marker
11TH WEEK	1ST	List the factors affecting the speed of DC Motors	White board, marker
	2ND	Speed control for DC Shunt motor using converter	Smart Class (Interactive Panel)
	3RD	Speed control for DC Shunt motor using chopper	White board, marker
	4TH	List the factors affecting speed of the AC Motors	White board, marker
12TH WEEK	1ST	Speed control of Induction Motor by using AC voltage regulator	White board, marker
	2ND	(V/F control)	White board, marker
	3RD	Working of UPS with block diagram	Smart Class (Interactive Panel)
	4TH	Battery charger circuit using SCR with the help of a diagram	White board, marker
13TH WEEK	1ST	Basic Switched mode power supply (SMPS) - explain its working & applications	White board, marker
		PLC AND ITS APPLICATIONS	
	2ND	Introduction of Programmable Logic Controller (PLC), Advantages of PLC	White board, marker
	3RD	Different parts of PLC by drawing the Block diagram and purpose of each part of PLC.	Smart Class (Interactive Panel)
	4TH	Applications of PLC, Ladder diagram	White board, marker
14TH WEEK	1ST	Contacts and coils in the following states) Normally open ii) Normally closed iii) Energized output iv) latched Output v) branching	White board, marker
	2ND	Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate & combination circuits using NAND, NOR	Smart Class (Interactive Panel)
	3RD	Timers-i) T ON ii) T OFF and iii) Retentive timers & Counters-CTU, CTD, Ladder diagrams using Timers and counters	White board, marker
	4TH	PLC Instruction set, Ladder diagrams for (i) DOL starter and STAR-DELTA starter (ii) Stair case lighting	White board, marker
	1ST	Ladder diagrams for (iii) Traffic light Control (iv) Temperature Controller	White board, marker

15TH WEEK	2ND	Special control systems- Basics DCS & SCADA systems	White board, marker
	3RD	Computer Control-Data Acquisition	White board, marker
	4TH	Direct Digital Control System (Basics only)	White board, marker

~~Source~~  
 14/04/25  
 (GF, ELECT)

8/4/26  
 HOD (ELECTRICAL)  
 GOVT. POLY.  
 GAJAPATI