DISCIPLINE – ELECTRICAL ENGG	SEMESTER 5TH	LESSON PLAN NAME OF THE TEACHING FACULTY-NIHARIKA SETHY	
SUB-PE & PLC	**No Of Days Per Week Class Alloted-4**	**SEMESTER FROM 14.07.2025 TO 15.11.2025**	
WEEK	**CLASS DAY**	**THEORY**	**STATUS**
1ST	1st	Construction, Operation, V-I characteristics & application of power diode, Construction, Operation, V-I characteristics & application of SCR,	
	2nd	Construction, Operation, V-I characteristics & application of DIAC	
	3rd	Construction, Operation, V-I characteristics & application of power	
	4th	Transistor Construction, Operation, V-I characteristics & application of TRIAC,	
2nd	1st	Construction, Operation, V-I characteristics & application of Power MOSFET,	
	2nd	Construction, Operation, V-I characteristics & application of GTO	
	3rd	Construction, Operation, V-I characteristics & application of IGBT	
	4th	Two transistor analogy of SCR Gate characteristics of SCR.	
3rd	1st	Switching characteristic of SCR during turn on and turn off	
	2nd	Turn on methods of SCR	
	3rd	Turn off methods of SCR (Line commutation and Forced commutation)	
	4th	Load Commutation Resonant pulse commutation Voltage and Current ratings of SCR. Protection of SCR	
4th	1st	Over voltage protection, Over current protection Gate protection	
	2nd	Firing Circuits	
	3rd	General layout diagram of firing circuit R firing circuits	
	4th	R-C firing circuit UJT pulse trigger circuit	

5th	1ST	Synchronous triggering (Ramp Triggering)	
	2nd	Design of Snubber Circuits, Understand the working of converters, ac regulators and Choppers	
	3rd	Controlled rectifiers Techniques(Phase Angle, Extinction Angle control	
	4th	Single quadrant semi converter, two quadrant full converter and dual Converter	
6th	1st	Working of single-phase half wave controlled converter with Resistive and R-L loads	
	2nd	Understand need of freewheeling diode	
	3rd	Working of single phase fully controlled converter with resistive and R- L loads.	
	4th	Working of three-phase half wave controlled converter with Resistive load, Working of three phase fully controlled converter with resistive load.	
7th	1st	Working of single phase AC regulator.	
	2nd	Working principle of step up & step down chopper. Control modes of chopper	
	3rd	Operation of chopper in all four quadrants	
	4th	Understand the inverters and cyclo- converters Classify inverters., Explain the working of series inverter	
8th	1st	Explain the working of parallel inverter. Explain the working of single-phase bridge inverter	
	2nd	Explain the basic principle of Cyclo-converter.	
	3rd	Explain the working of single-phase step up & step down Cyclo-converter	
	4th	Applications of Cyclo-converter.	
9th	1st	List applications of power electronic circuits. List the factors affecting the speed of DC Motors.	
	2nd	Speed control for DC Shunt motor using converter	
	3rd	Speed control for DC Shunt motor using chopper.	
	4th	List the factors affecting speed of the AC Motors.	
10th	1st	Speed control of Induction Motor by using AC voltage regulator	

	2nd	Speed control of induction motor by using converters and inverters (V/F control).	
	3rd	Working of UPS with block diagram	
	4th	Battery charger circuit using SCR with the help of a diagram. Basic	
11th	1st	Switched mode power supply (SMPS) - explain its working & applications	
	2nd	Introduction of Programmable Logic Controller(PLC)	
	3rd	Advantages of PLC Different parts of PLC by drawing the Block diagram	
	4th	purpose of each part of PLC.	
12th	1st	Applications of PLC	
	2nd	Ladder diagram	
	3rd	Description of contacts and coils in the following states	
	4th	i)Normally open ii) Normally closed iii) Energized output iv)latched Output v) branching	
13th	1st	Ladder diagrams for i) AND gate ii) OR gate and iii) NOT gate	
	2nd	Ladder diagrams for combination circuits using NAND,NOR, AND, OR and NOT	
	3rd	Timers-i)T ON ii) T OFF and	
	4th	iii)Retentive timer Counters-CTU, CTD	
14th	1st	Ladder diagrams using Timers and counters PLC Instruction set	
	2nd	Ladder diagrams	
	3rd	(i) DOL starter and STAR-DELTA starter	
	4th	(ii) Stair case lighting (iii) Traffic light Control (iv) Temperature Controller	
15th	1st	Special control systems- Basics DCS & SCADA systems	
	2nd	Computer Control–Data Acquisition, Direct Digital Control System (Basics only)	
	3rd	Doubt clearing class	
	4th	Previous years semester question answer discussion	