

DHABALESWAR INSTITUTE OF POLYTECHNIC

LESSON PLAN

Discipline	Semester	Name of the Teaching Faculty
Subject - power electronics & PLC.	No. of days per Week Class Alloted - 4 (four)	Semester from Dt. <u>4/10/2021</u> To Dt. <u>07/10/2022</u> No. of Weeks: <u>14 (fourteen)</u>
Week	Class Day	Theory / Practical Topics
<u>Oct 1st week</u> 2021	1st Day	Construction, operation, V-I characteristics & application of power diode, SCR, DIAC, TRIAC, power MOSFET, BJT & IGBT
	2nd "	Two transistor analogy of SCR.
	3rd "	Gate characteristics of SCR.
	4th "	Switching characteristics of SCR during turn on and turn off.
	5th	Turn on methods of SCR. Turn off methods of SCR (Line commutation and forced commutation) Load commutation, Resonant pulse commutation, Voltage and current ratings of SCR, Protection of SCR.
2nd 3rd	1st Day	Over current protection, heat protection.
	2nd "	General layout diagram of firing circuit, R firing circuits, R-C firing circuit.
	3rd "	UJT pulse triggering circuit, synchronous triggering (Ramp Triggering)
4th	1st "	Design of snubber circuit.
	2nd "	Controlled Rectifiers Techniques (phase angle Extinction angle control), Single quadrant, Semi converter, two quadrant full converter and dual converter.
	3rd	Working of Single-phase half wave controlled converter with resistive and R-L loads.
	4th	Understand need of freewheeling diode.
	5th	Working of Single phase fully controlled converter with resistive and R-L loads.
th overment)	1st	Working of three-phase half wave controlled converter with resistive load.
	2nd "	Working of three-phase fully controlled converter with resistive load.
	3rd "	Working of Single phase AC regulator.
	4th "	Working principle of step up & step down Chopper.

Sig. of Faculty

S. K. Kulkarni
H.O.D. Electronics & Telecomm. Engg
DIP Athgarh

Sig. of Principal

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MONTH	WEEK / DAY	THEORY / PRACTICAL TOPIC	
5TH NOV	5TH-DAY	Operation of Choppers in all four quadrants.	
6TH-NOV	1st. day	Classify inverters, Explain the working of series inverter.	
	2nd day	Explain the working of parallel inverter	
	3rd -	Explain the working of single-phase bridge inverter.	
	4th -	Explain the basic principle of cyclo-converter.	
7TH -	1st day -	Explain the working of single-phase step up & step down cyclo-converter.	
	2nd day -	Explain the working of single-phase step up & step down cyclo-converter.	
	3rd -	Application of cyclo-converter.	
	4th -	List applications of power electronic circuits.	
8TH -	1st day	List the factors affecting the speed of DC Motors.	
	2nd -	Speed control of DC shunt motor using converter.	
	3rd -	Speed control of DC shunt motor using chopper.	
	4th -	List of the factors affecting speed of AC Motors.	
	5th -	Speed control of induction motor by using AC voltage regulator.	
9TH -	1st -	Speed control of induction motor by using converter and inverters (V/F control)	
	2nd -	Working of UPS with block diagram.	
December	3rd -	Battery charger circuit using SCR with the help of a diagram.	
	4th -	Basic switched mode power supply (SMPS) - explain its working & applications.	
	5th -	Introduction of Programmable Logic Controller (PLC)	
10th	1st -	Advantages of PLC, Different parts of PLC by drawing the block diagram and purpose of each part of PLC.	
	2nd -	Applications of PLC, Ladder diagram.	
	3rd -	Description of contacts and coils in the following states - (i) Normally open (ii) Normally closed (iii) Energized output (iv) Latched output (v) - branching.	
	4th -	Ladder diagrams for (i) AND gate (ii) OR gate	

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Sig. of H.O.D / Academic Bursar

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MONTH	WEEK / DAY	THEORY / PRACTICAL TOPIC	
		(iii) - NOT Late.	
	5th day	Ladder diagrams for combination circuits using NAND, NOR, AND, OR and NOT	
11th	1st	Timers (i) 'ON' (ii) T OFF and (iii) Retentive timer.	
	2nd	Counters - CTU, CTD	
	3rd	Ladder diagrams using Timers and counters	
	4th	PLC Instruction Set.	
	5th	Ladder diagrams for following	
12th	1st	(i) - DIO Stator and STAR-DELTA Stator (ii) Stair case lighting (iii) Traffic light	
	2nd	Special Control Systems - Basics DCS & SCADA systems.	
	3rd	Computer Control - Data Acquisition, Direct Digital control system (Basics only)	
	4th	Turn on methods of SCR	
	5th	Turn off methods of SCR (Line commutation and force commutation)	
13th	1st	Explain the working of series inverter.	
	2nd	Explain the working of single phase step up cyclo-converter	
	3rd	Different parts of PLC by drawing the block diagram.	
	4th	List of the factors affecting speed of the AC Motor.	
14th			
Jan-2022	1st	Ladder diagrams for following:- (i) DIO Stator and STAR-DELTA Stator (ii) Stair case lighting (iii) Traffic light.	
	2nd	Special Control systems - Basics DCS and SCADA systems.	
	3rd	Computer Control - Data Acquisition, Direct Digital control system (Basic only)	

Sig. of Faculty

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