

UTKAL GOURAV MADHUSUDAN INSTITUTE OF TECHNOLOGY, RAYAGADA
DEPARTMENT OF ELECTRONICS & TELE-COMMUNICATION ENGINEERING
Academic Lesson Plan for 5thSemester - 2023 (Winter)
Subject: POWER ELECTRONICS & PLC (TH 5)
Name of the Teaching Faculty- Sri Kishore Ch. Prusty (PTGF)

SEMESTER FROM DATE:01/08/2023	No. of periods per week: 4 NO.OF WEEKS: 15 Total periods: 60	Internal Exam. : 20 Marks End Semester Exam.: 80 Marks Total Marks: 100 Marks
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WEEK	CLASS DAY	UNIT	THEORY/PRACTICAL TOPICS	REMARK
1ST	1ST	Understand The Construction & Working Of Power Electronic Devices	Construction, Operation, V-I characteristics & application of power diode, DIAC	
	2ND	Understand The Construction & Working Of Power Electronic Devices	Construction, Operation, V-I characteristics & application of SCR, Two transistor analogy of SCR	
	3RD	Understand The Construction And Working Of Power Electronic Devices	Construction, Operation, V-I characteristics & application of TRIAC, GTO	
	4TH	Understand The Constr. & Working Of Power Electronic Devices	Construction, Operation, V-I characteristics & application of power MOSFET.	
2ND	1ST	Understand The Construction And Working Of Power Electronic Devices	Construction, Operation, V-I characteristics & application of IGBT.	
	2ND	Understand The Construction And Working Of Power Electronic Devices	Gate characteristics of SCR.	
	3RD	Understand Construction And Working Of Power Electronic Devices	Switching characteristic of SCR during turn on and turn off	
	4TH	Understand The Construction & Working Of Power Electronic Devices	Turn on methods of SCR.	
3RD	1ST	Understand The Construction And Working Of Power Electronic Devices	Turn off methods of SCR, Line commutation	
	2ND	Understand The Construction And Working Of Power Electronic Devices	Turn off methods of SCR, Forced commutation- Load Commutation	
	3RD	Understand The Construction And Working Of Power Electronic Devices	Turn off methods of SCR, Forced commutation- Resonant pulse commutation	
	4TH	Understand The Construction And Working Of Power Electronic Devices	Voltage and Current ratings of SCR.	

4TH	1ST	Understand The Construction And Working Of Power Electronic Devices	Protection of SCR –(1) Over voltage protection (.2)Over current protection	
	2ND	Understand The Construction And Working Of Power Electronic Devices	Protection of SCR-(.3) Gate protection	
	3RD	Understand The Construction And Working Of Power Electronic Devices	Firing Circuits -General layout diagram of firing circuit	
	4TH	Understand The Construction And Working Of Power Electronic Devices	R firing circuits , R-C firing circuit	
5TH	1ST	Understand The Construction And Working Of Power Electronic Devices	UJT pulse trigger circuit	
	2ND	Understand The Construction And Working Of Power Electronic Devices	Synchronous triggering , Design of Snubber Circuits g (Ramp Triggering)	
	3RD	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS & CHOPPERS	Controlled rectifiers Techniques(Phase Angle, Extinction Angle control),	
	4TH	UNDERSTAND WORKING OF CONVERTERS , AC REGULATORS & CHOPPERS	Single quadrant semi converter, two quadrant full converter and dual Converter	
6TH	1ST	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS & CHOPPERS	Working of single-phase half wave controlled converter with Resistive and R-L loads	
	2ND	UNDERSTAND THE WORKING OF CONVERTERS , AC REGULATORS & CHOPPERS	Understand need of freewheeling diode. Working of single phase fully controlled converter with resistive and R- L loads.	
	3RD	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS	Working of three-phase half wave controlled converter with Resistive load	
	4TH	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS	Working of three phase fully controlled converter with resistive load.	
7TH	1ST	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS	Working of single phase AC regulator	

	2ND	UNDERSTAND WORKING OF CONVERTER AC REGULATORS & CHOPPERS	Working principle of step up chopper.	
	3RD	UNDERSTAND WORKING OF CONVERTER AC REGULATORS & CHOPPERS	Working principle of step down chopper.	
	4TH	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS	Control modes of chopper	
8TH	1ST	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS	Operation of chopper in 1 st and 3 rd quadrants.	
	2ND	UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS	Operation of chopper in 2 nd & 4 th quadrants.	
	3RD	Understand The Inverters And Cyclo-Converters	Classify inverters.	
	4TH	Understand The Inverters And Cyclo-Converters	Explain the working of series inverter.	
9TH	1ST	Understand The Inverters And Cyclo-Converters	Explain the working of parallel inverter	
	2ND	Understand The Inverters And Cyclo-Converters	Explain the working of single-phase bridge inverter.	
	3RD	Understand The Inverters And Cyclo-Converters	Explain the basic principle of Cyclo-converter.	
	4TH	Understand The Inverters And Cyclo-Converters	Explain the working of single-phase step up	
10TH	1ST	Understand The Inverters And Cyclo-Converters	Explain the working of single-phase step down Cyclo-converter.	
	2ND	Understand The Inverters And Cyclo-Converters	Applications of Cyclo-converter.	
	3RD	Understand Applications Of Power Electronic Circuits	List applications of power electronic circuits.	
	4TH	Understand Applications Of Power Electronic Circuits	List the factors affecting the speed of DC Motors.	
11TH	1ST	Understand Applications Of Power Electronic Circuits	Speed control for DC Shunt motor using converter	
	2ND	Understand Applications Of Power Electronic Circuits	Speed control for DC Shunt motor using chopper	
	3RD	Understand Applications Of Power Electronic Circuits	List the factors affecting speed of the AC Motors.	
	4TH	Understand Applications Of Power Electronic Circuits	Speed control of Induction Motor by using AC voltage regulator.	

12TH	1ST	Understand Applications Of Power Electronic Circuits	Speed control of induction motor by using converters and inverters (V/F control)	
	2ND	Understand Applications Of Power Electronic Circuits	Working of UPS with block diagram.	
	3RD	Understand Applications Of Power Electronic Circuits	Battery charger circuit using SCR with the help of a diagram.	
	4TH	Understand Applications Of Power Electronic Circuits	Basic Switched mode power supply (SMPS) - explain its working & applications	
13TH	1ST	PLC And Its Applications	Introduction of Programmable Logic Controller(PLC), Advantages of PLC Applications of PLC Ladder diagram	
	2ND	PLC And Its Applications	Different parts of PLC by drawing Block diagram & purpose of each part of PLC	
	3RD	PLC And Its Applications	Description of contacts and coils in the following states- i) Normally open ii) Normally closed iii) Energized output iv) latched Output v) branching	
	4TH	PLC And Its Applications	Ladder diagrams using Timers	
14TH	1ST	PLC And Its Applications	Ladder diagrams using counters	
	2ND	PLC And Its Applications	PLC Instruction set	
	3RD	PLC And Its Applications	Ladder diagrams for DOL starter (ii) Stair case lighting	
	4TH	PLC And Its Applications	Ladder diagrams for STAR-DELTA starter	
15 TH	1 ST	PLC And Its Applications	Ladder diagrams for Traffic light Control	
	2 ND	PLC And Its Applications	Ladder diagrams for Temperature Controller	
	3 RD	PLC And Its Applications	Special control systems- Basics DCS & SCADA systems	
	4 TH	PLC And Its Applications	Computer Control–Data Acquisition, Direct Digital Control System (Basics only)	