

GIETPOLYTECHNIC, JAGATPUR, CUTTACK

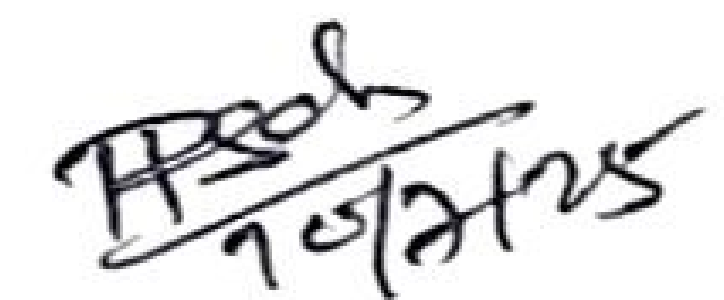
LESSON PLAN

Discipline: ELECTRONIC TELECOMMU NICATION ENGINEERING	Semester: 5 th	Name Of The Teaching Faculty: RUPAK KUMAR SAHOO
Subject: Power electronics(Th5)	No.Of Days Per Week Class Allotted: 04 P	Semester From Date: 14.07.2025 To Date: 15. 11.2025 No.of weeks: 15
Week	Class Day	Theory Topic
1 st week	1 st	<u>Unit 1: UNDERSTAND THE CONSTRUCTION & WORKING OF POWER ELECTRONICS</u> ➤ 1.1: Construction, operation, V-I characteristics & application of power diode, SCR, DIAC, TRIAC, power MOSFET, GTO & IGBT
	2 nd	➤ 1.2: Two transistor analogy of SCR ➤ 1.3: Gate characteristics of SCR
	3 rd	➤ 1.4: Switching characteristics of SCR during turnon & turnoff
	4 th	➤ 1.5: Turnon methods of SCR
2 nd week	1 st	➤ 1.6: Turnoff methods of SCR (Line communication & Forced communication) 1.6.1: Load communication
	2 nd	➤ 1.6.2: Resonant pulse communication
	3 rd	➤ 1.7: Voltage and Current ratings of SCR
	4 th	➤ 1.8: Protection of SCR 1.8.1: Overvoltage protection
3 rd week	1 st	➤ 1.8.2: Overcurrent protection 1.8.3: Gate protection
	2 nd	➤ 1.9: Firing circuits 1.9.1: general layout diagram of firing circuits
	3 rd	➤ 1.9.2: R-firing circuits
	4 th	➤ 1.9.3: R-C firing circuits 1.9.4: UJT pulse trigger circuit
4 th week	1 st	➤ 1.9.5: synchronous triggering (Ramp triggering) ➤ 1.10: Design of snubber circuits
	2 nd	<u>UNIT 2: UNDERSTAND THE WORKING OF CONVERTERS, AC REGULATORS AND CHOPPERS</u> ➤ 2.1: Controlled rectifier techniques
	3 rd	➤ 2.2: Working of single phase half wave controlled converter with resistive and R-L loads
	4 th	➤ 2.3: Understand need of freewheeling diode
	1 st	➤ 2.4: Working of single phase fully controlled converter with resistive and R-L loads

5 th week	2 nd	➤ 2.5: working of three phase half wave controlled converter with resistive load
	3 rd	➤ 2.6: Working of three phase fully controlled converter with resistive load
	4 th	➤ 2.7: Working of single phase AC regulator
6 th week	1 st	➤ 2.8: Working principle of step up & step down chopper ➤ 2.9: Control modes of chopper
	2 nd	➤ 2.10: Operation of chopper in all four quadrants
	3 rd	<u>UNIT 3: UNDERSTAND THE INVERTERS AND DCY CLO-CONVERTERS</u> ➤ 3.1: Classify inverters ➤ 3.2: Working of series inverter
	4 th	➤ 3.3: Working of parallel inverter ➤ 3.4: Working of single phase bridge inverter
7 th week	1 st	➤ 3.5: Basic principle of cyclo-converter ➤ 3.6: Working of single phase step up & step down cyclo-converter
	2 nd	➤ 3.7: Applications of Cyclo-converter
	3 rd	<u>UNIT 4: UNDERSTAND APPLICATIONS OF POWER ELECTRONICS CIRCUITS</u> ➤ 4.1: Application of power electronic circuits
	4 th	➤ 4.2: List the factors affecting the speed of DC motors
8 th week	1 st	➤ 4.3: Speed control for DC shunt motor using converter
	2 nd	➤ 4.4: Speed control for DC shunt motor using chopper
	3 rd	➤ 4.5: List the factors affecting speed of the AC motors
8 th week	4 th	➤ 4.6: Speed control of induction motor by using AC voltage regulator
9 th week	1 st	➤ 4.7: Speed control of Induction motor by using converters and inverters
	2 nd	➤ 4.8: Working of UPS with block diagram
	3 rd	➤ 4.9: Battery charger circuit using SCR with the help of a diagram
	4 th	➤ 4.10: Working & application of SMPS
10 th week	1 st	➤ 4.10: Working & application of SMPS
	2 nd	<u>UNIT 5: PLC AND ITS APPLICATIONS</u> ➤ 5.1: Introduction of PLC
	3 rd	➤ 5.2: Advantages of PLC
	4 th	➤ 5.2: Advantages of PLC
11 th week	1 st	➤ 5.3: Different parts of PLC
	2 nd	➤ 5.4: Application of PLC
	3 rd	➤ 5.5: Ladder diagram
	4 th	➤ 5.6: Description of contacts and coils
12 th week	1 st	➤ 5.6.1: Normally open
	2 nd	➤ 5.6.2: Normally closed
	3 rd	➤ 5.6.3: Energized output
	4 th	➤ 5.6.4: latched output, branching
12 th week	1 st	➤ 5.7.1: Ladder diagram for AND gate

	2 nd	➤ 5.7.2:LadderdiagramforORgate&NOTgate
	3 rd	➤ 5.8:LadderdiagramforcombinationcircuitusingNAND,NOR, AND,OR & NOT
	4 th	➤ 5.8:LadderdiagramforcombinationcircuitusingNAND,NOR, AND,OR&NOT
14 th week	1 st	➤ 5.8:LadderdiagramforcombinationcircuitusingNAND,NOR, AND,OR & NOT
	2 nd	➤ 5.9:Timers I. TON II. TOFF III. Retentivetimer
	3 rd	➤ 5.10:Counters:CTU, CTD
	4 th	➤ 5.11:Ladderdiagramssusingtimers&counters
15 th week	1 st	➤ 5.12:PLCinstructionset
	2 nd	➤ 5.13:Ladderdiagramsfollowing I. DOLstarter&star-delta starter
	3 rd	➤ 5.14:specialcontrolsystem
	4 th	➤ 5.15:computercontrol:dataacquisition


Signature of faculty


Signature of sr lecturer
Head of Dept. (MOD)
Electrical & ETC Engg.
G. E.T (I.C.T.Y), ...


Signature of principal