

Branch Name:	Electrical Engineering
Program Code:	ET109
Course Name:	Power Electronics-I Practical
Course Code:	2ET1090402P
Pre-requisite Course:	Fundamental Knowledge of Semiconductor physics and Basic Electronic is required

Course Objectives:

1. In this subject students will learn the generalized concepts of power electronics devices which are most commonly used in technical world specially electronics side.
2. Learn applications of various converters in DC Electric Drives.
3. The major objective of the subject is to understand working and performance of various choppers and AC to DC converters including their operation and control.

Teaching and Examination Scheme:

Teaching Scheme (Hours per week)				Evaluation Scheme (Marks)								Total (Marks)
Lecture (L)	Tutorial (T)	Practical (P)	Credit	Theory (Marks)				Practical (Marks)				
				University Assessment		Continuous Assessment		University Assessment		Continuous Assessment		
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
-	-	2	1	-	-	-	-	10	25	10	25	50

Course Contents:

Sr. No	Detail of Practical	Contact Hours
1	To Derive the Static V-I Characteristics of the DIAC.	04
2	To Perform Gate Characteristics of the TRIAC.	02
3	To Perform R-C Triggering Circuit for SCR.	02
4	To Verify Speed Control of Universal Motor by using DIAC & TRIAC.	02
5	To Simulate Boost Converter using MATLAB/SIMULINK.	04
6	To Simulate Single Phase Half-Wave Controlled Rectifier using MATLAB/SIMULINK.	04
7	To Simulate Single Phase Full-Wave Controlled Rectifier using MATLAB/SIMULINK.	04
8	To Perform the dynamic braking of DC shunt motor at various braking resistances.	02
9	To Simulate the plugging method of braking for DC shunt motor and also the effect of plugging.	04

Reference Books:

1. G. K. Dubey, "Fundamentals of Electrical Drives", Narosa Publishing House, New Delhi, 2nd ed.2001.
2. Dr. B. R. Gupta and V. Singhal, "Fundamentals of Electrical Drives and Control", S. K. Kataria & Sons (2014), New Delhi, 5th ed.2001.
3. Vedam Subramanyam, "Power Electronics – Devices, Converters and Applications", New Age International Publishers Pvt. Ltd., Bangalore, 2nd ed. 2006.

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the basics of power electronics.	2 Understanding
CLO2	Analyze, operate and control AC-to-DC converters (Rectifiers).	3 Applying 4 Analyze
CLO3	Analyze, operate and control DC-to-DC Converters (Choppers).	4 Analyze
CLO4	Apply the knowledge of power electronic converter for speed control of DC motors.	1 Remembering
CLO5	Simulate power electronic converters and their control scheme.	2 Understanding
CLO6	Identify, formulate and solve the numerical problems related to above machines.	3 Applying 5 Evaluate

Mapping of CLOs with POs & PSOs:

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes(PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1		L		H		M						M				L
CLO2	H				L	H		M		L			L		H	
CLO3				M			L				M		M			L
CLO4		L		H		M						M				L
CLO5				M			L				M		M			L
CLO6	H			H	L	M		M				M	L		H	L

H: High, M: Medium, L: Low