III B.Tech – I Semester
(20EE5108) POWER ELECTRONICS LAB

Int. Marks	Ext. Marks	Total Marks	L	T	P	C
15	35	50	-	-	3	1.5

Pre-Requisites: Power Electronics

Course Objectives:

- To study the characteristics of various power electronic devices and analyze firing circuits of SCR.
- To analyze the performance of single-phase and three-phase full-wave bridge converters with both resistive and inductive loads.
- To understand the operation of AC voltage regulator with resistive and inductive loads.
- To understand the working of Buck converter, Boost converter, and inverters.

S. No List of Experiments

1. Characteristics of Thyristor, MOSFET & IGBT.
2. R, RC & UJT firing circuits for SCR.
3. Three- Phase full converter with R &RL loads.
4. Boost converter in Continuous Conduction Mode operation.
5. Buck converter in Continuous Conduction Mode operation.
6. Single -Phase square wave bridge inverter with R & RL Loads.
7. Single-Phase PWM inverter
8. Single-Phase AC Voltage Regulator with R & RL Loads.
9. Single Phase dual converter in circulating current & non-circulating current mode of operation
10. Single -Phase semi converter with R & RL loads.
11. Single -Phase full converter with R & RL loads.
12. Single Phase steps down Cyclo-converter with R & RL Loads.

Course Outcomes:

After successful completion of the course, the students will be able to:

S.No	Course Outcome	BTL
1.	Study the characteristics of various power electronic devices.	L1
2.	Analyze the performance of single-phase and three-phase full-wave bridge converters with both resistive and inductive loads.	L4
3.	Understand the operation of a single-phase AC voltage regulator with resistive and inductive loads.	L2
4.	Understand the working of Buck converter, Boost converter, single-phase square wave inverter, and PWM inverter.	L2

Correlation of COs with POs& PSOs:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	1			2					3		2	3	2
CO2	3	2			1					3		2	3	2
CO3	3	1			2					2		2	2	2
CO4	2	2			1					2		2	2	2

Reference Books:

1. "Simulation of Power Electronic Circuit", by M.B. Patil, V. Ramanarayan, V.T. Ranganathan. Narosha, 2009.
2. MATLAB user`s manual – Mathworks, USA.
3. SIMULINK user`s manual – Mathworks, USA.