18PEC13	ADVANCED POWER ELECTRONICS LABORATORY-I	L	T	P	C
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Course Objectives:

1.	To provide an insight on the switching behaviors of power electronic switches
2.	To make the students familiar with the digital tools used in generation of gate pulses for the power electronic switches
3.	To make the students capable of implementing analog interfacing as well as control circuits used in a closed-loop control for power electronic system
4.	To make the students acquire knowledge on mathematical modeling of power electronic circuits and implementing the same using simulation tools

LIST OF EXPERIMENTS:

1. Study of Power electronics Switches with and without Snubber
   (i) IGBT (ii) MOSFET
2. Modelling of simple PN junction diodes
3. Modelling of SCR
4. Modelling of MOSFET / IGBT / BJT
5. Simulation of 1-phase semi-converter with R-load, RL load, and RLE (Motor) load
6. Simulation of 1-phase fully controlled converter with R-load, RL load, and RLE (motor) load at different firing angles.
7. Simulation of 1-phase dual converter.
8. Simulation of 3-phase semi-converter.
9. Simulation of 3-phase fully controlled converter at different firing angles.
10. Simulation of 1-phase full bridge inverter.
11. Simulation of 3-phase full bridge inverter.
12. Simulation of PWM inverter.
13. Simulation of 3-phase AC voltage controller.
14. Simulation of MOSFET / IGBT based choppers.
15. Simulation of DC-DC Buck-Boost converter with RL load.
16. Simulation of Series Resonant converter with RL load.
17. Numerical solution of ordinary differential, partial and integral equations using MATLAB.
18. Full converter fed resistive load
19. Full converter fed Resistive-Back Emf (RE) load at different firing angles
20. Full Converter fed Resistive-Inductive Load at different firing angles
21. Full converter fed DC motor load at different firing angles

Total (60+0)= 60 Periods

Course Outcomes:

Upon completion of this course, the students will be able to:

CO1	*:*	*Model power electronics converter/Inverter in software*
CO2	*:*	*Simulate any power electronic converter/Inverter*
CO3	*:*	*Obtain numerical solutions of partial, differential and integral equations*
CO4	*:*	*Implement single phase full converter for any type of R and RL load*
CO5	*:*	*Implement single phase full converter for dc motors*

PO / CO	CO Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO1	*Model power electronics converter/Inverter in software*	1	3	1	3	3	1	2	3	1	1	1
CO2	*Simulate any power electronic converter/Inverter*	1	1	2	1	3	1	2	3	1	1	1
CO3	*Obtain numerical solutions of partial, differential and integral equations*	1	2	1	3	2	1	1	1	1	1	2
CO4	*Implement single phase full converter for any type of R and RL load*	1	1	1	3	3	1	2	2	1	2	1
CO5	*Implement single phase full converter for dc motors*	1	1	1	1	3	1	1	2	2	1	1