

Course Name: Electric Drives Lab

Course Code: EE 791

Credit: 2

Prerequisites:

Sl. No.	Subject	Description	Level of Study
01	Electrical Machine	Theory regarding Electrical Machine	4 th Sem, 5 th Sem
02	Power Electronics	Theory regarding Power Electronics	6 th Sem

Course Objective:

- To impart knowledge on Performance of the fundamental control practices associated with AC and DC machines (starting, reversing, braking, plugging, etc.) using power electronics
- To impart industry oriented learning
- To evaluate the use of computer-based analysis tools to review the major classes of machines and their physical basis for operation

Course Outcomes:

At the end of the course, a student will be able to:

1. **Identify** relevant information to supplement to the Electric Drives (EE 701) course.
2. **Set up** control strategies to synthesize the voltages in dc and ac motor drives.
3. **Develop** testing and experimental procedures applying basic knowledge in electronics, electrical circuit analysis, electrical machines, microprocessors, and programmable logic controllers.
4. An **ability** to use standard methods to determine accurate modeling/simulation parameters for various general-purpose electrical machines and power electronics devices required for **designing** a system and solve drives related problems
5. **Estimate** constraints, uncertainties and risks of the system (social, environmental, business, safety issues etc.)
6. **Combine** the use of computer-based simulation tools relevant to electrical Drives with practical laboratory experimentation.

CO- PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	1	2	1	2	-	-	-	1	-	-	-	2
2	1	3	-	2	3	-	-	-	-	-	-	-
3	2	1	3	2	-	-	2	-	2	1	-	2
4	1	2	2	1	-	2	3	-	-	-	-	2
5	1	-	-	2	2	-	-	-	-	3	2	1
6	1	-	-	1	-	2	-	-	-	-	2	3

Correlation levels 1, 2 or 3 as defined above: 1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High) and “-” if there is no correlation.

Syllabus Indicating CO:

Sl no	Experiment Name	Relevant CO's
1	Study of thyristor controlled DC Drive.	CO1 CO2 CO3
2	Study of Chopper fed DC Drive	CO2 CO4 CO5
3	Study of AC Single phase motor-speed control using TRIAC.	CO5 CO6 CO1
4	4. PWM Inverter fed 3 phase Induction Motor control using PSPICE / MATLAB / PSIM Software.	CO1 CO3 CO4
5	VSI / CSI fed Induction motor Drive analysis using MATLAB/DSPICE/PSIM Software.	CO1 CO2 CO3
6	Study of V/f control operation of 3F induction motor drive.	CO1 CO3 CO4
7	Study of permanent magnet synchronous motor drive fed by PWM Inverter using Software.	CO1 CO2 CO3
8	Regenerative / Dynamic braking operation for DC Motor - Study using software.	CO1 CO3 CO4
9	Regenerative / Dynamic braking operation of AC motor - study is using software PC/PLC based AC/DC motor control operation.	CO1 CO2 CO3