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Department of Electrical Engineering	
Control of Electric Machines (63424)	
Total Credits	**3**
major elective	
Prerequisites	P1 : Control Systems (63343)

Course Contents

Elements of drive systems; requirements of industrial drives. Drive representation, quadrant operation, dynamic and regenerative braking. DC motors, converters for dc drives, drive performance analysis. Performance analysis of AC drives with variable voltage source and variable frequency supply. Performance analysis of induction motor drives with variable voltage and variable frequency supply. Field oriented (or vector) control of induction motor drives; Field oriented (or vector) control of PM AC motor drives Computer aided design.

	Intended Learning Outcomes (ILO's)	Student Outcomes (SO's)	Contribution
1	Learn the importance of the electrical drives	H	10 %
2	To understand basic concepts of different types of electrical drives and their performance and way to control them,	A C E	70 %
3	Learn computer aided softwares (Matlab simulink) to simulate the DC and AC drives and to design different types of controller for these drives.	K	20 %

Textbook and/ or Refrences

Electric Motor Drives (Modeling, Analysis and Control). R.Krishnan

Assessment Criteria	Percent (%)
Mid. Term Exam	20 %
Quizzes	10 %
Projects	20 %
Final Exam	50 %

Course Plan

Week	Topic
1,2	Elements of drive systems; requirements of industrial drives. Drive representation, quadrant operation, dynamic and regenerative braking.
3,4	DC motors, converters for dc drives, drive performance analysis
5,6	Principal operation of AC motors Midterm Exam
7,8	DC/AC inverters and PWM
9,10	Performance analysis of induction motor drives with variable voltage and variable frequency supply -Project
11,12	Field oriented (or vector) control of induction motor drives
13,14	Field oriented (or vector) control of PM AC motor drives
15	Final Exam