EE 560 Electric Machines and Drives

Course Syllabus

Lec	Date	<u>Topic</u>	<u>Assignment</u>
1	10/3	Course Overview, Background Material, Physics of DC Machines -	Software tools
		Theory of Operation	review
2	10/10	Dynamics of DC Machines – Modeling, Root Locus Methods,	Hand out HW #1
		Introduction to AC Machines	
3	10/17	Induction Machine Per Phase Equivalent Circuit, Speed-Torque	Hand in HW #1,
		Curve of Induction Machines, Per Unit Representation, V/Hz	Hand out HW #2
		Control of Induction Machines, Coupled Circuit Modeling of AC	
		Machines, Winding Functions, AC Machine Inductance	
		Calculations	
4	10/24	Space Harmonics in AC Machines, Flux Linkages in 36 Machines,	Hand in HW #2
		Modeling of 36 Machines	
5	10/31	Midterm Exam	
6	11/7	Complex Vector Modeling of AC Machines, Coordinate	Hand out HW#3
		Transformations, dq Modeling of AC Machines, dq Equivalent	
		Circuits, Block Diagrams of AC Machines, Power Flow in 3¢	
		Machines, Torque Production in 36 Machines	
7	11/14	Physical Interpretation of Torque Production in 36 Machines, dq	Hand in HW #3
		Theory Applied to Salient Pole Machines, Torque Production in	Hand out HW#4
		Salient Pole Machines, Extension of dq Theory Applied to PM	Hand out Final
		Machines, Introduction to Field Orientation	Project
8	11/21	Steady State and Dynamic Field Orientation of Induction	Hand in HW #4
		Machines, Direct FOC, Indirect FOC, Current Regulation in DC	
		Machines, Speed Control, Current Regulation in AC Machines	
9	11/28	Brushless DC (BLDC) Machines, Direct Torque Control,	
		Fundamentals of Inverters for Machine Control	
10	12/5	Review of Pulse Width Modulation Techniques, Course Review	
		Final Project Presentations	
11	12/12	Final Project Presentations	Turn in Final
			Project