

Course Type	Course Code	Name of Course	L	T	P	Credit
DC	EEEC308	Electrical Machines-II	3	0	0	9
Course Objective						
The course objective is to impart knowledge on different fundamental aspects of two important AC machines such as Induction Motor and Synchronous Machines from industrial point of view.						
Learning Outcomes						
Upon successful completion of this course, students will: <ul style="list-style-type: none"> • understand the basic operating concepts of AC machines • be able to analyze and compare the performance different AC machines • understand basic control mechanisms • understanding the areas of applications of electrical machines in scientific point of view. 						
Unit No.	Topics to be Covered		Lecture Hours	Learning Outcome		
1	Three-phase Induction motor: Construction and types, Principle of operation, Equivalent circuit, Phasor diagram, Speed-torque characteristics, Cogging and Crawling, Starting and Speed control.		13	In-depth knowledge on induction motors.		
2	Single-phase Induction motors: Construction and types, Operation, Equivalent Circuit, Starting methods, Speed-torque characteristics, Phasor diagram.		8	Understanding principle of operation and use of single-phase induction motors.		
3	Synchronous Generator: Constructions and types, Emf equation, Phasor diagram, Armature reaction, Characteristics, Voltage regulations, Synchronization and power system interfacing, Parallel operation, Synchronizing power, Excitation characteristics. Salient pole synchronous machine: Two- reaction theory, Phasor diagram and Voltage regulation.		14	Understanding different fundamental aspects of synchronous generators.		
4	Synchronous Motor: Expression for torque, Phasor diagram, Operating characteristics, V- curves and O-curves, Starting, Hunting and Damper winding.		7	Understanding the fundamentals and applications of synchronous motors.		

Text Books

1. Electric Machines - Kothari & Nagrath
2. Electrical Machines - P. K. Mukherjee and S. Chakravorti

Reference Books

1. The performance and design of alternating machines - M. G. Say.