

Branch Name:	Electrical Engineering
Program Code:	ET109
Course Name:	Electrical Machine-II Practical
CourseCode:	2ET1090401P
Pre-requisiteCourse:	Elements of Electrical Engineering

Course Objectives:

1. In this subject student will learn concept regarding to AC machines
2. The major objective of the subject is to understand working and performance of synchronous machines and induction machines.
3. To make students aware about importance of AC Machines and its applications in industries and power plants.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								
					Theory (Marks)				Practical (Marks)				Total (Marks)
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
1	-	-	2	2	-	-	-	-	10	25	10	25	50

Course Contents:

Sr. No	Detail of Practical	Contact Hours
1	To perform no load and blocked rotor test on a three phase induction motor to find out its performance parameters with the help of (a) Equivalent circuit (b) Circle diagram.	04
2	To perform direct load test on a three phase induction motor to find out its performance parameters at different load conditions.	02
3	To study the construction of a three phase induction motor with the help of a cut section model.	02
4	To study about the starters of three phase induction motors.	02
5	To study about the speed control methods for three phase induction motors.	04
6	To observe and compare the performance of three phase motor with VVVF drive.	02
7	To perform no load and blocked rotor test on single phase induction motor to obtain its equivalent circuit.	02
8	To study about the induction generator.	02
9	To perform the speed control and power factor control of a Schrage motor.	04
10	To perform open circuit, short circuit and resistance measurement tests on a synchronous generator(alternator) and to find out its voltage regulation by different methods. (a) Synchronous impedancemethod (b) MMF method (c) ZPF method (d) AIEE method.	02
11	To obtain the direct axis and quadrature axis synchronous reactance of a salient pole machine with the slip test.	02

Reference Books:

1. Bhimbra P S, Electrical Machinery, Khanna Publishers.
2. Say M G, Theory, Performance & Design of A.C. Machines, CBS Publishers.
3. Fitzgerald A.E and Kingsley, Electrical Machinery, Tata McGraw.

List of Open Source Software/learning website:

Open Source Software:

LTSpice for circuit simulation,

KiCAD for CAD application

Circuit Lab:

<https://www.circuitlab.com/editor/>

Learning website

<http://www.electrical-engineering-portal.com/>

<http://nptel.iitm.ac.in/courses.php>

Course Learning Outcomes (CLO): On completion of this course, the students will be able to:

CLO	Description	Bloom's Taxonomy Level
CLO1	Understand the construction, working principle, performance and applications of Single phase motors, Poly-phase induction motor.	2 Understanding
CLO2	Carry out test and conduct performance experiments on Single phase motors, Poly-phase induction motor.	3 Applying 4 Analyze
CLO3	Identify the need of these machines in the society.	4 Analyze
CLO4	Know working principle, performance and applications synchronous generator (Alternator), synchronous motor and commutator motors.	1 Remembering
CLO5	Understand test and conduct performance experiments on synchronous generator (Alternator), synchronous motor and commutator motors.	2 Understanding
CLO6	Identify, formulate and solve the numerical problems related to above machines.	3 Applying 5 Evaluate

Mapping of CLOs with POs & PSOs

Course Learning Outcomes	Program Outcomes (POs)												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSO4
CLO1		L		H		M						M				L
CLO2	H				L	H		M		L			L		H	
CLO3				M			L				M		M			L
CLO4		L		H		M						M				L
CLO5				M			L				M		M			L
CLO6	H			H	L	M		M				M	L		H	L

H: High, M: Medium, L: Low