

Branch Name:	Mechanical Engineering
Program Code:	ET101
Course Name:	Electrical Technology
Course Code:	2ET1010304T
Pre-requisite Course:	Elements of Electrical Engineering

Course Objectives:

1. To learn the theory of electrical machines, which help for analyses the machines fundamentals.
2. To make the students familiar with the impact of electrical machines operation.
3. To understand the fundamental parts of rotating machines.
4. To learn basic application of electrical machines.

Teaching and Examination Scheme:

Credit	Teaching Scheme Hours per week				Evaluation Scheme (Marks)								Total (Marks)
					Theory (Marks)				Practical (Marks)				
	L	T	P	Total	SEE		CCA		SEE		CCA		
					Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
03	03	-	-	03	24	60	16	40	-	-	-	-	100

Course Contents:

Sr. No	Topic	Total Hours	Weightage (%)
1	D. C. Machine: Constructional features and types of D. C. Machines, Basic Principles, EMF equation, Torque and speed equations of D.C generator ,Performance and speed characteristics of series, shunt and compound generators and motors, speed control and application of motors.	09	20
2	Single Phase Transformers: Construction and principle of operation, EMF equations, Equivalent circuit and phase diagram, OC & SC Test, Regulation and efficiency, Auto transformer, Current transformer, Potential transformer, Parallel operation.	12	30
3	Synchronous Machines: Constructional features, Principle of operation, EMF equation of alternator, Regulation of alternator, Synchronizing of alternator, Construction and operation of synchronous motor for power factor improvement, Starting procedure of Synchronous motor.	09	20
4	Induction Motor: Constructional features and principle of operation, starting and running condition, Speed torque characteristics, Starting, Speed control and applications of 3-phase induction motor, Single phase motors, Principle of operation, Construction.	12	30

List of Text Books:

1. Theraja B L, Electrical Technology–Vol II, S Chand Publications.
2. Gupta J B, Electrical Machines, S K Kataria Publications.
3. Nagrath I J and Kothari DP, Electric Machines, Tata McGraw Hill.

List of Reference Books:

1. Ghosh Samarjit, Electrical Machines, Pearson Education.
2. Fitzgerald A.E and Kingsley, Electrical Machinery, Tata McGraw.

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

CLO	Description	Bloom's Taxonomy Level
CLO1	Formulate and then analyze the working of D.C Generator under different conditions.	4 Analyze 5 Evaluating
CLO2	Analyze the response and characteristics of D.C series, shunt and compound generator and motors.	2 Understanding 3 Applying
CLO3	Understand the equivalent circuit and construction of single phase transformer.	1 Remembering 2 Understanding
CLO4	Perform various test of single phase transformer.	3 Applying
CLO5	Analyze basic characteristics and performance of synchronous machine.	1 Remembering 3 Applying
CLO6	Understand the application of different induction motor in industries.	2 Understanding

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
CLO1				M		M			M			L		
CLO2	H	M			M		L				L		L	
CLO3			M	M			M	H	L				M	
CLO4	H	M				L				L		M		M
CLO5				H	L	M			L				H	
CLO6		M			M	H	M				L		H	L

H: High, M: Medium, L: Low