



SIDDHARTH INSTITUTE OF ENGINEERING AND TECHNOLOGY, KORAPUT
DEPARTMENT OF ELECTRICAL ENGINEERING
LESSON PLAN

Name of the Course : TH-4 : DC MACHINES AND TRANSFORMER			
Name of the Faculty: Er. KIRTI YOGADARSINI PAITAL			
Semester from date : 01.07.2026 TO 05.11.2026			
Course Code :	EEPC207	Semester :	3 rd
Total Periods:	45 Periods	Examination :	3Hrs
Theory Periods :	45 Hrs.	Progressive Assessment :	30
Lecture :	3Hrs/week	End Term Exam :	70
Credit :	3	Total Marks :	100

VISION:

To create competent and industry ready Electrical Diploma Engineers with professional and social values to meet future challenges.

MISSION:

- To prepare diploma holders through “qualitative competency-based education system” to compete with national requirement along with core values.
- To produce dynamic Electrical Engineers to serve the society and industry.
- To develop leadership qualities, communication skills, critical thinking and attitude for lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES:

PEO1	Applying technical knowledge and skills learned in the field of Electrical Engineering to excel in professional and/or higher education.
PEO2	To provide students an excellent academic environment and make them aware the needs of Society and Industry to become a successful Professional/Entrepreneur.
PEO3	To engage in lifelong learning, career enhancement to adopt to emerging technologies.

COURSE OUTCOME:

CO1	Explain the construction and working principle of dc machines.
CO2	Describe the performance characteristics of dc motor and dc generator.
CO3	Explain the construction and working principle of transformer.
CO4	Describe the performance of single phase and three-phase transformer.
CO5	Discuss about special purpose transformers

TOPIC WISE DISTRIBUTION OF PERIODS

Unit No.	Topics	Periods
I	DC Generators	09
II	D.C. Motors	09
III	Single Phase Transformers	10
IV	Three Phase Transformers	09
V	Special Purpose Transformers	08



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Week	Day	Theory Topic	Corresponding CO
1 st	MONDAY	NO CLASS	
	WEDNESDAY	D.C. generator: construction, parts, materials and their functions	CO1
	THURSDAY	D.C. generator: construction, parts, materials and their functions	CO1
2 nd	MONDAY	Principle of operation of DC generator	CO1
	WEDNESDAY	Fleming's right hand rule	CO1
	THURSDAY	Derive the emf equation of DC Generator	CO1
3 rd	MONDAY	Schematic diagrams of different types of DC generator	CO1
	WEDNESDAY	Schematic diagrams of different types of DC generator	CO1
	THURSDAY	Armature reaction	CO1
4 th	MONDAY	Commutation	CO1
	WEDNESDAY	Applications of D.C. generators	CO1
	THURSDAY	D.C. motor: Types of DC motors	CO2
5 th	MONDAY	Fleming's left hand rule	CO2
	WEDNESDAY	Principle of operation of Back e.m.f. and its significance	CO2
	THURSDAY	Voltage equation of DC motor	CO2
6 th	MONDAY	Torque and Speed; Armature torque, Shaft torque	CO2
	WEDNESDAY	BHP, Brake test, losses, efficiency	CO2
	THURSDAY	DC motor starters: Necessity, two point and three point starters	CO2
7 th	MONDAY	Speed control of DC shunt and series motor: Flux and Armature control	CO2
	WEDNESDAY	Brushless DC Motor: Construction and working	CO2
	THURSDAY	Types of transformers: Shell type and core type	CO3
8 th	MONDAY	Construction: Parts and functions	CO3
	WEDNESDAY	Materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores	CO3
	THURSDAY	Transformer: Principle of operation	CO3
9 th	MONDAY	EMF equation of transformer: Derivation, Voltage transformation ratio	CO3
	WEDNESDAY	Significance of transformer ratings	CO3
	THURSDAY	Transformer No-load phasor diagram, Leakage reactance	CO3
10 th	MONDAY	Transformer On-load phasor diagram, Leakage reactance	CO3
	WEDNESDAY	Equivalent circuit of transformer: Equivalent resistance and reactance	CO3
	THURSDAY	Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency	CO3
11 th	MONDAY	Bank of three single phase transformers, (Y-Y, Δ - Δ , Δ -Y, Y- Δ)	CO4
	WEDNESDAY	Single unit of three phase transformer	CO4

	THURSDAY	Distribution transformers: Construction and cooling,	CO4
12 th	MONDAY	Power transformers: Construction and cooling,	CO4
	WEDNESDAY	Criteria for selection of distribution transformer, and power transformer.	CO4
	THURSDAY	Need of parallel operation of three phase transformer	CO4
13 th	MONDAY	Conditions for parallel operation.	CO4
	WEDNESDAY	Polarity tests on mutually inductive coils and single phase transformers	CO4
	THURSDAY	Polarity test, Phasing out test on Three-phase transformer	CO4
14 th	MONDAY	Single phase autotransformers: Construction	CO5
	WEDNESDAY	Single phase autotransformers: working and applications.	
	THURSDAY	Three phase autotransformers: Construction	
15 th	MONDAY	Three phase autotransformers:, working and applications.	
	WEDNESDAY	Isolation transformer: Constructional Features and applications	
	THURSDAY	Isolation transformer: Constructional Features and applications	

Kupattel
18/6/26

Signature of Faculty Concerned
(Electrical Engg.)

Kupattel
18/6/26

Head of Department
(Electrical Engg.)

Electrical Engg
S.I.E. & T. KORAPUT

Kupattel
18/06/2026

Principal

S.I.E.&T, KORAPUT

Principal

Siddharth Institute of Engineering &
Technology Ektagada, Koraput