

UTKAL GOURAV MADHUSUDAN INSTITUTE OF TECHNOLOGY
RAYAGADA
DEPARTMENT OF ELECTRICAL ENGINEERING



LESSON PLAN
SEMESTER-3RD
SESSION- WINTER (2026)
SUBJECT: DC MACHINE & TRANSFORMER
NAME OF FACULTY: SRI SRIKANTA THAKUR

Discipline: Electrical Engg.	Semester: 3rd	Name of the Teaching Faculty: SRIKANTA THAKUR
Subject: DC Machine & Transformer (DCM&T)	No. of Days/Per week class allotted: 03	Semester From Date: 01.07.2026 To Date: 5.11.2026 No. of Weeks: 19 Weeks
Week	Class Day	Theory/ Practical Topics
1 st (01/07/2026-04/07/2026)	1 st	DC GENERATORS 1.1 D.C. generator: construction, parts, materials and their functions
	2 nd	1.2 Principle of operation of DC generator
2 nd (05/07/2026-11/07/2026)	3 rd	1.2.1 Fleming's right hand rule
	4 th	1.2.2 Derive the emf equation of DC Generator
	5 th	1.2.3 Schematic diagrams of different types of DC generator
3 rd (12/07/2026-18/07/2026)	6 th	1.2.4 Armature reaction
	7 th	1.2.5 Commutation
	8 th	1.2.5 Commutation
4 th (19/07/2026-25/07/2026)	9 th	1.2.6 Applications of D.C. generators
	10 th	D.C. MOTORS 2.1 D.C. motor: Types of DC motors
	11 th	2.1.1 Fleming's left hand rule
5 th (26/07/2026-01/08/2026)	12 th	2.1.2 Principle of operation of Back e.m.f. and its significance
	13 th	2.1.3 Voltage equation of DC motor
	14 th	2.1.4 Torque and Speed; Armature torque, Shaft torque, BHP, Brake test, losses, efficiency
6 th (02/08/2026-08/08/2026)	15 th	2.2 DC motor starters: Necessity, two point and three point starters
	16 th	2.3 Speed control of DC shunt and series motor: Flux and Armature control
	17 th	2.3 Speed control of DC shunt and series motor: Flux and Armature control
7 th (09/08/2026-15/08/2026)	18 th	2.4 Brushless DC Motor: Construction and working
	19 th	CLASS TEST
	20 th	SINGLE PHASE TRANSFORMERS 3.1 Types of transformers: Shell type and core type
8 th (16/08/2026-22/08/2026)	21 th	3.2 Construction: Parts and functions
	22 th	3.3 Materials used for different parts: CRGO, CRNGO, HRGO, amorphous cores
	23 th	3.4 Transformer: Principle of operation
9 th (23/08/2026-29/08/2026)	24 th	3.5 EMF equation of transformer: Derivation, Voltage transformation ratio
	25 th	3.6 Significance of transformer ratings
10 th (30/08/2026-05/09/2026)	26 th	3.7 Transformer No-load and on-load phasor diagram, Leakage reactance
	27 th	3.8 Equivalent circuit of transformer: Equivalent resistance and reactance
11 th (06/09/2026-12/09/2026)	28 th	3.9 Voltage regulation and Efficiency: Direct

		loading, OC/SC method, All day efficiency
	29 th	1st INTERNAL ASSESSMENT
12 th (13/09/2026-19/09/2026)	30 th	3.9 Voltage regulation and Efficiency: Direct loading, OC/SC method, All day efficiency
13 th (20/09/2026-26/09/2026)	31 th	<u>THREE PHASE TRANSFORMERS</u>
		4.1 Bank of three single phase transformers, (Y-Y, Δ - Δ , Δ -Y, Y- Δ)
	32 th	4.2 Single unit of three phase transformer
	33 th	4.3 Distribution and Power transformers: Construction and cooling,
14 th (27/09/2026-03/10/2026)	34 th	4.3 Distribution and Power transformers: Construction and cooling,
	35 th	4.4 Criteria for selection of distribution transformer, and power transformer.
15 th (04/10/2026-10/10/2026)	36 th	4.5 Need of parallel operation of three phase transformer
	37 th	4.6 Conditions for parallel operation.
	38 th	4.7 Polarity tests on mutually inductive coils and single phase transformers
16 th (11/10/2026-17/10/2026)	39 th	4.8 Polarity test, Phasing out test on Three-phase transformer
	40 th	<u>SPECIAL PURPOSE TRANSFORMERS</u>
		5.1 Single phase and three phase autotransformers: Construction, working and applications.
	41 th	5.1 Single phase and three phase autotransformers: Construction, working and applications.
17 th (18/10/2026-24/10/2026)	42 th	5.1 Single phase and three phase autotransformers: Construction
	43 th	5.1 Single phase and three phase autotransformers: Construction
18 th (25/10/2026-31/10/2026)	44 th	2nd INTERNAL ASSESSMENT
	45 th	5.2 Isolation transformer: Constructional Features and applications
	46 th	5.2 Isolation transformer: Constructional Features and applications
19 th (01/11/2026-05/11/2026)	47 th	5.2 Isolation transformer: Constructional Features and applications
	48 th	REVISION