

DEPARTMENT OF ELECTRICAL ENGINEERING

GOVERNMENT POLYTECHNIC, BARGARH



LESSON PLAN

ELECTRIC POWER TRANSMISSION & DISTRIBUTION (TH-2)

4TH. SEMESTER

ELECTRICAL ENGINEERING DEPARTMENT

PREPARED BY

NITESH KUMAR ACHARYA

LECTURER(S-II) (ELECTRICAL ENGG)

GOVERNMENT POLYTECHNIC, BARGARH

Department Of Electrical Engineering

Semester: 4th. DIPLOMA

Session: SUMMER-2026(22.12.2025 to 18.04.2026)

Subject: ELECTRICAL POWER TRANSMISSION & DISTRIBUTION No of Period :-45 (3p/week)

Branch: Electrical Engineering

Name of Faculty: NITESH KU. ACHARYA

Week	Period	Topics to be covered
1 st Week	1	Basics of Transmission and Distribution-Introduction
	2	Single line diagrams with components of the electric supply transmission and distribution systems
	3	Classification of transmission lines
2 nd Week	4	Primary and secondary transmission & distribution, Standard voltage level used in India
	5	Classification of transmission lines: based on type of voltage, voltage level, length and others
	6	Characteristics of high voltage for power transmission
3 rd Week	7	Method of construction of electric supply transmission system- 110 kV, 220 kV, 400 kV
	8	Method of construction of electric supply transmission system- 110 kV, 220 kV, 400 kV
	9	Method of construction of electric supply distribution systems- 220 V, 400V, 11 kV, 33 kV
4 th Week	10	Transmission Line Parameters and Performance-Line Parameters: Concepts of R, L and C of line parameters and types of lines
	11	Performance of short line: Efficiency, regulation and its derivation,
	12	Performance of short line -effect of power factor, vector diagram for different power factor
5 th Week	13	Performance of short line-numerical
	14	Performance of medium line- end condenser methods- derivation & numerical
	15	Performance of medium line- nominal 'T' methods- derivation & numerical
6 th Week	16	Performance of medium line- nominal ' π ' methods - derivation & numerical
	17	Transposition of conductors and its necessity
	18	Skin effect and proximity effect
7 th Week	19	Extra High Voltage Transmission- Extra High Voltage AC (EHVAC) transmission line: Necessity, high voltage substation components such as transformers and other switchgears
	20	Advantages, limitations and applications of EHVAC
	21	EHVAC lines in India
8 th Week	22	Ferranti and Corona effect
	23	High Voltage DC (HVDC) Transmission Line: Necessity components, advantages, limitations and applications
	24	Layout of monopolar, bi-Polar and homo-polar transmission lines of HVDC
9 th Week	25	HVDC Lines in India
	26	Features of EHVAC and HVDC transmission line
	27	Flexible AC Transmission line: Features, types of FACTS controller

10 th Week	28	New trends in wireless transmission of electrical power
	29	A.C Distribution System- AC distribution: Components classification, requirements of an ideal distribution system, primary and secondary distribution system
	30	Feeder and distributor, factors to be considered in design of feeder and distributor
11 th Week	31	Types of different distribution schemes: radial, ring, and grid, layout, advantages, disadvantages and applications
	32	Voltage drop, sending end and receiving end voltage
	33	Distribution Sub-Station: Classification, site selection, advantages, disadvantages and applications
12 th Week	34	Single Line diagram (layout) of 33/11KV Sub-Station
	35	Single Line diagram (layout) of 11KV/400V sub-station
	36	Components of Transmission and Distribution Line- Overhead Conductors: Properties of material, types of conductor with trade names
13 th Week	37	significance of sag in transmission line
	38	Line supports: Requirements, types of line structures and their specifications, methods of erection
	39	Line Insulators
14 th Week	40	Properties of insulating material, Selection of material, Types of insulators and their applications
	41	Causes of insulator failure
	42	Derivation of equation of string efficiency for string of three suspension insulator
15 th week	43	Methods of improving string efficiency
	44	Underground Cables: Requirements, classification, construction, comparison with overhead lines
	45	cable laying and cable jointing

Signature of Faculty *[Signature]* 27/12/2025

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22.12.2025
Signature of HOD