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DEPARTMENT OF ELECTRICAL ENGINEERING
Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2025-26
TH:2- ELECTRIC POWER TRANSMISSION AND DISTRIBUTION

Course Code : EEPC204 **(TH:2)**	**Semester : 4th**
Total Periods : 45 Hours	**Examination : 3 Hours**
Theory Periods : 3 P/Week	**Progressive Assessment: 30 Marks**
Maximum Marks : 100	**End Semester Examination : 70 Marks**
Semester From Date : 22/12/2025	**To Date :**
Name of the Teaching Faculty: Er. BIKASH JENA	

WEEK	PERIOD	TOPIC
1st	1st	**Unit-I:** Single line diagrams of electric supply systems; Components of transmission and distribution.
	2nd	Classification of transmission lines; Primary and secondary transmission.
	3rd	Standard voltage levels in India; Classification based on voltage, length, and type.
2nd	1st	Characteristics of high voltage for power transmission; Advantages and limitations.
	2nd	Construction methods of electric supply transmission systems (110 kV, 220 kV, 400 kV).
	3rd	Construction methods of distribution systems (220 V, 400 V, 11 kV, 33 kV).
3rd	1st	**Unit-II:** Transmission Line Parameters: Concepts of Resistance (R), Inductance (L), and Capacitance (C).
	2nd	Performance of Short Transmission Lines: Efficiency and Regulation.
	3rd	Derivation of Regulation; Effect of power factor on performance.
4th	1st	Vector diagrams for short lines at different power factors.
	2nd	Performance of Medium Transmission Lines: Representation and Nominal 'T' method.
	3rd	Performance of Medium Lines: Nominal 'π' and End Condenser methods.
5th	1st	Transposition of conductors: Necessity and methods.
	2nd	Skin effect and Proximity effect in conductors.
	3rd	**Unit-III:** EHVAC Transmission: Necessity and substation components (Transformers/Switchgears).
6th	1st	Advantages, limitations, and applications of EHVAC; EHVAC lines in India.
	2nd	Ferranti effect: Phenomenon and mathematical overview.
	3rd	Corona effect: Factors affecting corona, advantages, and disadvantages.
7th	1st	HVDC Transmission: Necessity, components, and layout.

	2nd	Layout of Monopolar, Bi-Polar, and Homo-polar HVDC lines.
	3rd	Advantages and limitations of HVDC; HVDC lines in India.
8th	1st	Comparative features of EHVAC and HVDC transmission lines.
	2nd	Flexible AC Transmission (FACTS): Features and types of controllers.
	3rd	New trends in Wireless Transmission of electrical power.
9th	1st	**Unit-IV:** A.C. Distribution System: Components, classification, and ideal requirements.
	2nd	Primary and secondary distribution systems.
	3rd	Feeders and Distributors: Design factors and differences.
10th	1st	Distribution Schemes: Radial, Ring Main, and Grid systems.
	2nd	Layout, advantages, and disadvantages of different distribution schemes.
	3rd	Voltage drop calculations; Sending end and receiving end voltage concepts.
11th	1st	Distribution Sub-Station: Classification and site selection criteria.
	2nd	Single Line Diagram (Layout) of 33/11 KV Sub-Station.
	3rd	Single Line Diagram (Layout) of 11 KV/400 V Sub-station.
12th	1st	Symbols and functions of various substation components.
	2nd	**Unit-V;** Overhead Conductors: Material properties and trade names (ACSR, etc.).
	3rd	Concept of Sag: Significance and factors affecting sag in overhead lines.
13th	1st	Line Supports: Requirements and types of line structures/poles.
	2nd	Specifications and methods of erection for line supports.
	3rd	Line Insulators: Properties of insulating materials and selection.
14th	1st	Types of Insulators: Pin, Suspension, Strain, and Shackle insulators.
	2nd	Causes of insulator failure; String Efficiency for suspension insulators.
	3rd	Derivation of equation for string efficiency (string of three insulators).
15th	1st	Methods of improving string efficiency (Grading rings, longer cross-arms).
	2nd	Underground Cables: Construction, requirements, and classification.
	3rd	Comparison of UG cables with Overhead lines; Cable laying and jointing methods.

22/12/25

Lect. Stage-I, Elect Dept.
Government Polytechnic, BLS
Polytechnic, BLS
Teaching Faculty

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I/C HOD, Dept of EE
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22/12/25