



# GIETPOLYTECHNIC, JAGATPUR, CUTTACK

## LESSONPLAN

| Discipline:  | Semester:-                                      | Name of the Teaching Faculty:-   |
|--|---|--|
| Electrical Engg.   | 4 <sup>TH</sup>                                 | Pradeepta prajnanarjan swain   |
| Subject:-<br>Electrical power<br>Transmission<br>And<br>distribution<br>(TH-2) | No of<br>Days/per<br>Week Class<br>Allotted: 03 | Semester-4 <sup>TH</sup> From:22.12.2025 To:18.04.2026<br>No of Weeks:-15  |
| Week   | Class/Day                                       | Theory Topics  |
| 1 <sup>st</sup>  | 1 <sup>st</sup>                                 | <b>Basics of Transmission and Distribution</b><br>1.1 Single line diagrams with components of the electric supply transmission and distribution systems<br>1.2 Classification of transmission lines  |
|  | 2 <sup>nd</sup>                                 | 1.3 Primary and secondary transmission<br>1.4 Standard voltage level used in India   |
|  | 3 <sup>rd</sup>                                 | 1.5 Classification of transmission lines: based on type of voltage, voltage level, length and others   |
| 2 <sup>nd</sup>  | 1 <sup>st</sup>                                 | 1.6 Characteristics of high voltage for power transmission   |
|  | 2 <sup>nd</sup>                                 | <b>Transmission Line Parameters and Performance</b><br>2.1 Line Parameters: Concepts of R, L and C of line parameters and types of lines   |
|  | 3 <sup>rd</sup>                                 | 2.2 Performance of short line: Efficiency, regulation and its derivation, effect of power factor, vector diagram for different power factor  |
| 3 <sup>rd</sup>  | 1 <sup>st</sup>                                 | 2.3 Performance of medium line: representation, nominal 'T', nominal 'π' and end condenser methods   |
|  | 2 <sup>nd</sup>                                 | 2.5 Skin effect and proximity effect   |
|  | 3 <sup>rd</sup>                                 | <b>Extra High Voltage Transmission</b><br>3.1 Extra High Voltage AC (EHVAC) transmission line: Necessity, high voltage substation components such as transformers and other switchgears<br>3.1.1 Advantages, limitations and applications of EHVAC |
| 4 <sup>th</sup>  | 1 <sup>st</sup>                                 | 3.1.2 EHVAC lines in India<br>3.2 Ferranti and Corona effect   |
|  | 2 <sup>nd</sup>                                 | 3.3 High Voltage DC (HVDC) Transmission Line: Necessity components, advantages, limitations and applications   |
|  | 3 <sup>rd</sup>                                 | 3.3.2 HVDC Lines in India<br>3.4 Features of EHVAC and HVDC transmission line  |
| 5 <sup>th</sup>  | 1 <sup>st</sup>                                 | 3.5 Flexible AC Transmission line: Features, types of FACTS controller<br>3.6 New trends in wireless transmission of electrical power  |
|  | 2 <sup>nd</sup>                                 | <b>A.C Distribution System</b><br>4.1 AC distribution: Components classification, requirements of an ideal distribution system, primary and secondary distribution system  |
|  | 3 <sup>rd</sup>                                 | 4.2 Feeder and distributor, factors to be considered in design of feeder and distributor   |
| 6 <sup>th</sup>  | 1 <sup>st</sup>                                 | 4.3 Types of different distribution schemes: radial, ring, and grid, layout, advantages, disadvantages and applications  |
|  | 2 <sup>nd</sup>                                 | 4.3 Types of different distribution schemes: radial, ring, and grid, layout, advantages, disadvantages and applications<br>4.4 Voltage drop, sending end and receiving end voltage   |
|  | 3 <sup>rd</sup>                                 | 4.5 Distribution Sub-Station: Classification, site selection, advantages,  |

disadvantages and applications

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| 7th  | 1st | 4.6 Single Line diagram (layout) of 33/11KV Sub-Station, 11KV/400V sub-station   |
|      | 2nd | 4.7 Symbols and functions of their components  |
|      | 3rd | 4.5 Distribution Sub-Station: Classification, site selection, advantages, disadvantages and applications   |
| 8th  | 1st | 4.7 Symbols and functions of their components  |
|      | 2nd | <b>Components of Transmission and Distribution Line</b><br>5.1 Overhead Conductors: Properties of material, types of conductor with trade names, significance of sag   |
|      | 3rd | 5.2 Line supports: Requirements, types of line structures and their specifications, methods of erection  |
| 9th  | 1st | 5.3 Line Insulators<br>5.3.1 Properties of insulating material   |
|      | 2nd | 5.3.2 Selection of material<br>5.3.3 Types of insulators and their applications  |
|      | 3rd | 5.3.4 Causes of insulator failure<br>5.3.5 Derivation of equation of string efficiency for string of three suspension insulator  |
| 10th | 1st | 5.3.5 Derivation of equation of string efficiency for string of three suspension insulator   |
|      | 2nd | 5.3.6 Methods of improving string efficiency   |
|      | 3rd | 5.3.6 Methods of improving string efficiency   |
| 11th | 1st | 5.4 Underground Cables: Requirements, classification, construction, comparison with overhead lines, cable laying and cable jointing.   |
|      | 2nd | 5.4 Underground Cables: Requirements, classification, construction, comparison with overhead lines, cable laying and cable jointing.   |
|      | 3rd | <b>Basics of Transmission and Distribution</b><br>1.7 Method of construction of electric supply transmission system- 110 kV, 220 kV, 400 kV<br>1.8 Method of construction of electric supply distribution systems- 220 V, 400V, 11 kV, 33 kV |
| 12th | 1st | <b>Transmission Line Parameters and Performance</b><br>2.4 Transposition of conductors and its necessity   |
|      | 2nd | <b>Extra High Voltage Transmission</b><br>3.3.1 Layout of monopolar, bi-Polar and homo-polar transmission lines of HVDC  |
|      | 3rd | Class test   |
| 13th | 1st | Doubt clearing class   |
|      | 2nd | <b>Components of Transmission and Distribution Line</b><br>5.3.5 Derivation of equation of string efficiency for string of three suspension insulation   |
|      | 3rd | 5.3.6 Methods of improving string efficiency   |
| 14th | 1st | Doubt clearing class   |
|      | 2nd | <b>A.C Distribution System</b><br>4.6 Single Line diagram (layout) of 33/11KV Sub-Station, 11KV/400V sub-station   |
|      | 3rd | Doubt clearing class   |
| 15th | 1st | Doubt clearing class   |
|      | 2nd | Doubt clearing class   |
|      | 3rd | Doubt clearing class   |

Pradeepta Pradhan  
Sign. of faculty  
23.12.25

23.12.25  
Sign. of sr. lecturer

23.12.25  
Sign. of principal

Head of Dept. (HOD)  
Etc: . . .  
G . . .