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DEPARTMENT OF ELECTRICAL ENGINEERING

Govt. Polytechnic, Balasore

LESSON PLAN FOR ACADEMIC SESSION - 2025-26

ELECTRICAL INSTALLATION AND ESTIMATING

Course Code : Th.1	**Semester : 6th**
Total Periods : 75(60+15) Periods	**Examination : 3 Hours**
Theory Periods : 4 P/Week	**Internal Assessment : 20 Marks**
Tutorial : - 1 P/Week	**End Semester Examination : 80 Marks**
Maximum Marks : 100	
Semester From Date : 22/12/2025	**To Date :**
Name of Teaching Faculty: Er. Bikash Jena, lecture stage-1 (Electrical Engg.)	

Week	PERIOD	Topics
1st	1st	INDIAN ELECTRICITY RULES: Definitions, Ampere, Apparatus, Accessible, Bare, cable, circuit, circuit breaker, conductor voltage(low, medium, high, EH), live, dead, cut-out, conduit, system,danger, Installation, earthing system, span, volt, switch gear, etc.
	2nd	General safety precautions, rule 29, 30, 31, 32, 33, 34, 35, 36,40, 41, 43, 44, 45, 46.
	3rd	General conditions relating to supply and use of energy : rule 47, 48, 49, 50, 51, 54, 55,56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 70.
	4th	OH lines : Rule 74, 75, 76, 77, 78, 79, 80, 86, 87, 88,89,90,91.
	5th	Tutorial classes
2nd	1st	ELECTRICAL INSTALLATIONS: Electrical installations, domestics, industrial, Wiring System, Internal distribution of Electrical Energy.
	2nd	Methods of wiring, systems of wiring, wire and cable, conductor materials used in cables, insulating materials mechanical protection.
	3rd	Types of cables used in internal wiring, multi-stranded cables, voltage grinding of cables, general specifications of cables.
	4th	ACCESSORIES: Main switch and distribution boards, conduits, conduit accessories and fittings, lighting accessories and fittings..
	5th	Tutorial classes
3rd	1st	Fuses, important definitions, determination of size of fuse – wire, fuse units.
	2nd	Earthing conductor, earthing, IS specifications regarding earthing of electrical installations, points to be earthed. Determination of size of earth wire and earth plate for domestic and industrial installations.
	3rd	Material required for GI pipe earthing
	4th	LIGHTING SCHEME: Aspects of good lighting services. Types of lighting schemes.
	5th	Tutorial classes
4th	1st	Determination of number of points (light, fan, socket, outlets).
	2nd	Design of lighting schemes, factory lighting, public lighting installations.
	3rd	Street lighting, general rules for wiring.
	4th	Determination of total load, determination of Number of sub-circuits.
	5th	Tutorial classes
5th	1st	INTERNAL WIRING: Type of internal wiring, metal sheathed wiring.
	2nd	Cleat wiring, CTS wiring.
	3rd	Wooden casing capping
	4th	Conduit wiring, their advantage and disadvantages comparison and applications.

	5th	Tutorial classes
6th	1st	Condult wiring, their advantage and disadvantages comparison and applications.
	2nd	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m2 with given light, fan & plug points.
	3rd	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m2 with given light, fan & plug points.
	4th	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m2 with given light, fan & plug points.
	5th	Tutorial classes
7th	1st	Prepare one estimate of materials required for CTS wiring for small domestic installation of one room and one verandah within 25 m2 with given light, fan & plug points.
	2nd	Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m2 with given light, fan & plug points.
	3rd	Prepare one estimate of materials required for conduit wiring for small Domestic installation of one room and one verandha within 25 m2 with given light, fan & plug points.
	4th	Prepare one estimate of materials required for conduit wiring for small domestic installation of one room and one verandha within 25 m2 with given light, fan & plug points.
	5th	Tutorial classes
8th	1st	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points.
	2nd	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points.
	3rd	Prepare one estimate of materials required for concealed wiring for domestic installation of two rooms and one latrine, bath, kitchen & verandah within 80m2 with given light, fan & plug points.
	4th	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.
	5th	Tutorial classes
9th	1st	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.
	2nd	Prepare one estimate of materials required for erection of conduct wiring to a small workshop installation about 30m2 and load within 10 KW.
	3rd	OVER HEAD INSTALLATION: Main components of overhead lines, line supports, factors Governing Height of pole, conductor materials, determination of size of conductor for overhead transmission line, cross arms, pole brackets and clamps, guys and stays.
	4th	Conductors configurations, spacing and clearances, span lengths, overhead line insulators, types of insulators, lighting arresters, danger plates, anti-climbing devices, bird guards, beads of jumpers, jumpers, tee-offs, guarding of overhead lines.
	5th	Tutorial classes
10th	1st	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	2nd	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	3rd	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	4th	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of

		conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	5th	Tutorial classes
11th	1st	Prepare an estimate of materials required for LT distribution line within load of 100 KW maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	2nd	Prepare an estimate of materials required for HT distribution line (11 KV) within 2 km and load of 2000 KVA maximum and standard spans involving calculation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation of the size of conductor (from conductor chart), current carrying capacity and voltage regulation consideration using ACSR.
	3rd	OVER HEAD SERVICE LINES: Components of service lines, service line (cables and conductors), bearer wire, lacing rod. Ariel fuse, service support, energy box and meters etc
	4th	Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building
	5th	Tutorial classes
12th	1st	Prepare and estimate for providing single phase supply of load of 5 KW (light, fan, socket) to a single stored residential building.
	2nd	Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter
	3rd	Prepare and estimate for providing single phase supply load of 3KW to each floor of a double stored building having separate energy meter
	4th	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	5th	Tutorial classes
13th	1st	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using insulated wire.
	2nd	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined.
	3rd	Prepare one estimate of materials required for service connection to a factory building with load within 15 KW using bare conductor and insulated wire combined.
	4th	ESTIMATING FOR DISTRIBUTION SUBSTATIONS: Introduction
	5th	Tutorial classes
14th	1st	Prepare one materials estimate for following types of transformer substations
	2nd	Prepare one materials estimate for following types of transformer substations
	3rd	Prepare one materials estimate for following types of transformer substations
	4th	Pole mounted substation
	5th	Tutorial classes
15th	1st	Pole mounted substation
	2nd	Plinth Mounted substation.
	3rd	Plinth Mounted substation.
	4th	Plinth Mounted substation.
	5th	Tutorial classes

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