DEPARTMENT OF ELECTRICAL ENGINEERING

GOVERNMENT POLYTECHNIC, BARGARH

LESSON PLAN

ELECTRICAL INSTALLATION & ESTIMATING

6th SEMESTER

ELECTRICAL ENGINEERING

PREPARED BY

HEMANTA KUMAR PRADHAN

LECTURER (ELECTRICAL)

DEPARTMENT OF ELECTRICAL ENGINEERING

VISION:

To produce Electrical Engineer professionals who can contribute for socio-economic and technological development to meet global needs.

MISSION:

M1 - To strengthen academic infrastructure leading to quality professional by using modern technical tools and technologies.

M2 - To impart innovative knowledge among the students and make more industry-institution programs to make them successful professionals for serving the society.

M3 - To provide a learning environment to improve problem solving abilities, leadership abilities, ethical responsibilities and lifelong learning.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

PEO1: Apply electrical engineering knowledge and practical skills to solve well-defined engineering problems using modern tools and techniques.

PEO2: Perform effectively in industry and society as competent junior engineer, supervisors, or entrepreneurs with ethical and sustainable engineering practices.

PEO3: Demonstrate teamwork, communication, leadership, and project management skills in professional engineering activities.

PEO4: Engage in lifelong learning and adapt to emerging technologies for career growth and higher education.

PROGRAM SPECIFIC OUTCOMES

The electrical diploma engineers will be able to:

PSO1:-Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate, design and investigate engineering problems of electric circuits, analog and digital electronics, control system, electrical machines and power system.

PSO2:- Apply the appropriate techniques and modern engineering hardware and software tools in electrical engineering to engage in life-long learning and to successfully adapt in multidisciplinary environments.

PSO3:-Work professionally in power systems engineering, Electrical machinery and electrical circuit.

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Semester:6th
Subject:EI&E
Branch: Electrical Engineering

Season: Winter -2025
No. of period: 60(4p/week)
Name of Faculty: Hemanta Ku. Pradhan

Class No.	Topics to be Covered
1	Introduction to Electrical Estimation & Costing, Syllabus Discussion
2	Electrical Components Used in Estimation, Definitions
3	General Safety Precautions, IE Rules (29–46)
4	General Conditions Relating to Supply & Use of Energy (Rules 47–60)
5	General Conditions Relating to Supply & Use of Energy (Rules 61–70)
6	Overhead Lines: IE Rules (74–91)
7	Electrical Installations: Domestic & Industrial, Wiring Systems
8	Joint Box Wiring System
9	Loop-in Wiring System
10	Wires & Cables: Conductor and Insulation Materials
11	Cable Specifications, Multi-stranded Cables, Voltage Grading
12	Main Switches, Distribution Boards, Fuses, Earthing, Earth Wire Sizing
13	G.I. Pipe Earthing
14	G.I. Plate Earthing
15	Lighting Principles and Lighting Design
16	Factory and Street Lighting
17	Tutorial/Assignment on Unit-I
18	General Rules for Wiring, Load & Sub-circuit Calculation
19	Types of Internal Wiring
20	Comparison of Wiring Systems
21	Load Calculation and Selection of Cable Size
22	Single Line Diagram of House Wiring
23	House Wiring Planning and Estimation Procedure
24	Estimate for One Room (4 × 4 m)
25	Estimate for One Room & Verandah
26	Estimate for One Room, Verandah & Bathroom
27	Estimate for Two Rooms & Verandah
28	Workshop Installation Planning
29	Estimate for Workshop Installation (30 m², 10 kW)
30	Tutorial/Numerical Problems on Internal Wiring
31	Unit-II Revision
32	Components of Overhead Lines
33	Conductors, Supports & Pole Height Calculation

34	Materials Required for Overhead Distribution Line
35	LT Distribution Line Estimation
36	LT Line Estimation (Continuation)
37	Numerical Problems on LT Estimation
38	HT Distribution Line Estimation (11 kV, 2 km, 2000 kVA)
39	HT Line Estimation (Continuation)
40	Numerical Problems on HT Line
41	Current Carrying Capacity & Voltage Regulation Problems
42	Overhead Service Line Components
43	Procedure for Solving Overhead Line Problems
44	Unit-III Tutorial
45	Estimate for Single-Phase Residential Service Connection (5 kW)
46	Residential Service Connection (Continuation)
47	Double-Storey Residential Building Estimation
48	Double-Storey Building (Continuation)
49	Factory Service Connection Using Insulated Wire
50	Factory Service Connection Using Bare & Insulated Conductors
51	Factory Service Connection (Continuation)
52	Distribution System Estimation Procedure
53	Pole Mounted Substation Estimation
54	Pole Mounted Substation (Continuation)
55	Plinth Mounted Substation Estimation
56	Plinth Mounted Substation (Continuation)
57	Numerical Problems on Distribution Estimation
58	Numerical Problems on Service Connection
59	Doubt Clearing Session
60	Revision

Faculty Signature

HOD Signature