

DEPARTMENT OF ELECTRICAL ENGINEERING
GOVERNMENT POLYTECHNIC, BARGARH



LESSON PLAN

ELECTRICAL DRAWING (PR4 4)

4TH SEMESTER

ELECTRICAL ENGINEERING

PREPARED BY

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SR. 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.

Week	Class No.	Unit	Topic
Week 1	1	Unit 1	Introduction to Electrical Drawing and BIS Standards
	2	Unit 1	Importance of Wiring Diagrams and Control Circuits
	3	Unit 1	D.C. Motor Starters – Introduction
	4	Unit 1	3-Point D.C. Motor Starter – Theory
	5	Unit 1	3-Point D.C. Motor Starter – Drawing Practice
	6	Unit 1	3-Point D.C. Motor Starter – Complete Diagram
Week 2	7	Unit 1	4-Point D.C. Motor Starter – Theory
	8	Unit 1	4-Point D.C. Motor Starter – Circuit Diagram
	9	Unit 1	4-Point D.C. Motor Starter – Drawing Practice
	10	Unit 1	DOL Starter – Principle
	11	Unit 1	DOL Starter – Wiring Diagram
	12	Unit 1	DOL Starter – Drawing Practice
Week 3	13	Unit 1	Star-Delta Starter – Theory
	14	Unit 1	Power Circuit of Star-Delta Starter
	15	Unit 1	Control Circuit of Star-Delta Starter
	16	Unit 1	Star-Delta Starter – Complete Drawing
	17	Unit 1	Auto Transformer Starter – Theory
	18	Unit 1	Auto Transformer Starter – Drawing
Week 4	19	Unit 1	Rotor Resistance Starter – Principle
	20	Unit 1	Rotor Resistance Starter – Wiring Diagram
	21	Unit 1	Rotor Resistance Starter – Drawing Practice
	22	Unit 1	Comparison of Motor Starters
	23	Unit 1	Revision of Starter Circuits
	24	Unit 1	Assignment/Test
Week 5	25	Unit 2	Introduction to D.C. Machine Parts
	26	Unit 2	Pole and Pole Shoe – Construction
	27	Unit 2	Pole and Pole Shoe – Dimensional Drawing
	28	Unit 2	Pole and Pole Shoe – Drawing Practice
	29	Unit 2	Commutator – Construction Details
	30	Unit 2	Commutator – Dimensional Drawing
Week 6	31	Unit 2	Commutator – Drawing Practice
	32	Unit 2	Armature – Construction
	33	Unit 2	Armature – Dimensional Drawing
	34	Unit 2	Armature – Drawing Practice
	35	Unit 2	Armature Core and Slot Details
	36	Unit 2	Armature Drawing Completion
Week 7	37	Unit 2	Introduction to Armature Windings
	38	Unit 2	Simple Lap Winding – Theory
	39	Unit 2	Simple Lap Winding – Development Diagram
	40	Unit 2	Simple Lap Winding – Drawing Practice
	41	Unit 2	Simple Wave Winding – Theory
	42	Unit 2	Simple Wave Winding – Development Diagram
Week 8	43	Unit 2	Simple Wave Winding – Drawing Practice
	44	Unit 2	Comparison of Lap and Wave Windings
	45	Unit 2	Complete DC Machine Drawing
	46	Unit 2	CAD Practice on DC Machine Parts
	47	Unit 2	CAD Practice on Windings

	48	Unit 2	Unit Test
Week 9	49	Unit 3	Introduction to Transformer Drawings
	50	Unit 3	Stepped Core Type Transformer – Construction
	51	Unit 3	Stepped Core Type – Assembly Drawing
	52	Unit 3	Stepped Core Type – Drawing Practice
	53	Unit 3	Plane Shell Type Transformer – Construction
	54	Unit 3	Plane Shell Type – Assembly Drawing
Week 10	55	Unit 3	Plane Shell Type – Drawing Practice
	56	Unit 3	Complete Transformer Assembly Drawing
	57	Unit 3	Transformer CAD Drawing
	58	Unit 3	Transformer Drawing Corrections
	59	Unit 3	Transformer Drawing Assessment
	60	Unit 3	Revision
Week 11	61	Unit 5	BIS and REC Standards for Electrical Drawings
	62	Unit 5	Earthing Installation – Types
	63	Unit 5	Earthing Installation – BIS Standard Sketch
	64	Unit 5	Earthing Installation – Drawing Practice
	65	Unit 5	LT Distribution Pole Structure
	66	Unit 5	Double Pole Structure for LT Line Drawing
Week 12	67	Unit 5	HT Distribution Pole Structure
	68	Unit 5	Double Pole Structure for HT Line Drawing
	69	Unit 5	LT & HT Structure Drawing Practice
	70	Unit 5	Unit Test
	71	Unit 6	Introduction to Substations
	72	Unit 6	Symbols Used in Substation Drawings
Week 13	73	Unit 6	33/11 kV Distribution Substation – Components
	74	Unit 6	Single Line Diagram of 33/11 kV Substation
	75	Unit 6	Drawing Practice of 33/11 kV SLD
	76	Unit 6	11/0.4 kV Distribution Substation – Components
	77	Unit 6	Single Line Diagram of 11/0.4 kV Substation
	78	Unit 6	Drawing Practice of 11/0.4 kV SLD
Week 14	79	Unit 6	Comparison of Distribution Substations
	80	Unit 6	Complete Substation Drawing Practice
	81	Unit 8	Introduction to Electrical CAD Software
	82	Unit 8	Drawing Electrical Symbols Using CAD
	83	Unit 8	Printing and Plotting Electrical Symbols
	84	Unit 8	CAD Assignment on Electrical Symbols
Week 15	85	Unit 8	CAD Drawing of DC Machine Parts
	86	Unit 8	CAD Drawing of AC Machine Parts
	87	Unit 8	Electrical Installation Layout of a Building
	88	Unit 8	CAD Drawing of Building Electrical Layout
	89	Unit 8	Final CAD Project and Printout Submission
	90	Unit 8	Final Revision, Viva and Assessment