

GOVERNMENT CO-ED POLYTECHNIC, JAGDALPUR BASTAR(C.G)

DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Session: - Jan - June 2026

Semester: - 4th

Session start date as per University Calendar: - 05/03/2026

Course Name: - Digital Electronics

Course Code: - (2025471(025))

Name of Subject teacher: - BHOLENATH TAMBOLI

Unit -1 Number System and Codes

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
1.1 Comparison of digital and analog systems.	1	1.1 Perform various arithmetic operations using different number systems.	2	
1.2 Number Systems: Binary, Decimal, Octal and Hexadecimal and their Conversions.	4	1.2 Verify the conversion of number systems using the kits in the lab.		
1.3 Binary Addition Subtraction Multiplication and Division	2	1.3 Verify and implement the Gray code to Excess -3 code conversion and vice- versa..	1	
1.4 1's and 2's complement of a number. Basic arithmetic operation using complement method	2			
1.5 Different types of codes: 8421 BCD, Excess-3, Gray codes, ASCII	1			

Number of periods planned (CI + LI) : 10+03

Unit – 2 Logic Gates and Boolean Algebra

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
2.1 Boolean algebra: Laws of Boolean algebra and DeMorgan's Theorem	1	2.1 Use various logic gates and understands their applications.	2	
2.2 Types of logic gates: AND, OR and NOT Universal Gates: NAND, NOR, EX-OR and EX-NOR. Truth table, symbol, implementation of basic gate using Universal gate	4	2.2 Verify the Boolean algebra by the kits available in the lab.		
2.3 Implementation of basic gate using Universal gate	1			
2.4 Max - term, Min - term, Sum of product (SOP) and Product of Sum (POS) expressions.	2			
2.5 Simplification of Boolean functions using laws and theorems.	2	2.3 Develop skills to build and troubleshoot digital circuits.	1	
2.6 Simplification of Boolean functions using K- map method (up to 4 variables).	3			

Number of periods planned (CI + LI) : 13+03

Unit – 3 Combinational Circuits

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
3.1 Half Adder, Full Adder, Half subtractor, Full subtractor.	2	3.1 Design and implement adders and subtractors.	2	
3.2 Parallel adder and subtractor, BCD adder.	1	3.2 Develop skills to apprehend IC 74150 and IC 74139..		
3.3 Magnitude comparator (2 and 3 bit).	2			
3.4 IC 7485 (Pin diagram and truth table).	1			

3.5 Encoders: 4- Input and 2-Output encoder. Octal to Binary.	1			
3.6 Binary to BCD Encoder . BCD to binary encoder.	1			
3.7 Multiplexer: 2 x 1, 4 x 1 and 8 x 1 multiplexer (IC 74151).	2			
3.8 Decoders: 3-Line to 8-Line Decoder, 8-4-2-1 BCD to Decimal Decoder	1			
3.9 De-multiplexer: 2 x 1, 4 x 1 and 8 x 1 de-multiplexer	2			

Number of periods planned (CI + LI) : 13+02

Unit – 4 Sequential Circuits

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
4.1 Flip Flop - basic flip flop and latch. RS F/F, JK F/F, D F/F, T F/F, truth table, characteristic table and excitation table.	4	4.1 Design and build registers and counter circuits.	2	
4.2 Race around condition, Master Slave JK flip flop.	2	4.2 Identify different types of flip flops and corresponding ICs.		
4.3 UP-DOWN counter (2 to 3 bit), IC 7490 (Pin diagram and truth table).	2			
4.4 Universal Shift Registers, IC 74194 (Pin diagram and truth table).	1			

Number of periods planned (CI + LI) : 09+02

Unit – 5 Convertors and Memories

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (L.I)	No. of Periods	Remark
5.1 Digital to analog converters: weighted resistor.R-2R Ladder network	2	5.1 Identify the analog output for a 4-bit binary input using S/H circuit and D/A converter.	1	
5.2 Analog to digital converters: Successive approximation, Single and Dual slope converters.	3	5.2 Simulate a digital circuit using the virtual laboratory software.	1	
5.3 Different types of semiconductor memories: RAM .ROM, EEPROM, UVEPROM.	2			
5.4 Static RAM, Dynamic RAM, Flash ROM and non-volatile RAM.	1			

Number of periods planned (CI + LI) : 08+02

Number of Total periods planned : 53


Bhokarath Tamboli
 (Name and Signature)

Subject Teacher


HOD
 (Department of Electrical Engineering)

GOVERNMENT CO-ED POLYTECHNIC, JAGDALPUR BASTAR(C.G)

DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Session: - April May 2026

Semester: - 4th

Session start date as per University Calendar: - 27/01/2026

Course Name: - AC Machines

Course Code: - 2024472(024)

Name of Subject teacher:- AJAY KUMAR SWARNKAR

Unit-1.0 Alternators

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
1.1 Types and applications	1	1.1 Perform direct load test on alternator to determine voltage regulation.	2	
1.2 Construction- Salient and Cylindrical rotor	1			
1.3 Equivalent circuit and phasor diagram	1	1.2 Perform voltage regulation of alternator by synchronous impedance method for Unity, lagging and leading power factor.	2	
1.4 Voltage equation	1			
1.5 Voltage regulation by synchronous impedance method, Open Circuit, Short Circuit characteristics	1			
1.6 Synchronization and conditions of synchronization	1	1.3 Synchronize a given alternator with infinite bus bar- By two bright and one dark lamp method and by Synchroscope.	2	
1.7 Synchronization of alternator with bus bar/alternator: two bright and one dark lamp method	1			
1.8 Cooling system of alternator Maintenance of given alternators	1			

Number of periods planned (CI + LI) : 14

Number of periods actually taken :

Unit-2.0 Synchronous Motor

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
2.1 Working principle	1	2.1 Test the performance of synchronous motor at different load conditions to see the effect of variation of excitation and pf (V & inverted V curve)	2	
2.2 Starting methods	1			
2.3 Equivalent circuit and phasor diagram	1			
2.4 Effect of change in excitation and pf- 'V' and inverted 'V' curves	1			
2.5 Applications of Synchronous motor - Synchronous condenser and constant speed	1			
2.6 Hunting and its prevention	1			
2.7 Maintenance of synchronous motors	1			

Number of periods planned (CI + LI) : 09

Number of periods actually taken :

Unit-3.0 Three Phase Induction Motors

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
3.1. Construction, types- Squirrel cage - Single, double cage, Wound rotor	1	3.1 Assemble/Disassemble a given 3 phase Induction motor and identify its various parts	1	
3.2. Working principle, Torque-Slip curve, equivalent circuit and phasor diagram	1	3.2 Measure the slip of 3- phase Induction motor by using; - Tachometer and - Stroboscopic	1	
3.3. Torque equation, Starting, running and condition for the maximum torque (Only expression)	1	3.3 Perform direct load test on three phase induction motor and draw performance curves.	1	
3.4. Necessary of starter and types of starters- DOL, Star delta, Autotransformer type and Rotor resistance starter.	1	3.4 Make connections of DOL starter / star- delta starter / Auto Transformer / Rotor Rheostat starter for respective three phase induction motor	1	
3.5. No load and Blocked rotor test, Losses and efficiency	1	3.5 Perform speed control of squirrel cage induction motor by: Changing the supply voltage. Changing the applied frequency. 3.6 Perform speed control of slip-ring induction motor by rotor rheostat control.	1	
3.6. Speed control of squirrel cage and slip- ring induction motor.	1			
3.7. Maintenance of different types of induction motors.	1			

		3.7 Perform no load and block rotor test to analyze the performance of a 3 phase induction motor	1	
Number of periods planned (CI + LI) : 14 Number of periods actually taken :				
Unit-4.0 Single Phase Induction Motor				
Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
4.1 Construction, working and types based on starting methods: split phase- Resistance Start, Capacitor start, Capacitor start capacitor run, Shaded pole induction motor	2	4.1 Test ceiling fan motor for its functioning.	1	
4.2 Double revolving field theory – equivalent circuit.	1	4.2 Perform no load test on single phase induction motor to measure rotational losses.	1	
4.3 Speed/ torque characteristics	1	4.3 Perform Load test on single phase capacitor type induction motor	1	
4.4 Maintenance of different types of single phase motors	1			
Number of periods planned (CI + LI) : 08 Number of periods actually taken :				
Unit-5.0 Special electrical machines				
Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
5.1 Construction, working Speed/ torque characteristics (where ever applicable) and applications of Special electrical machines : i. AC servo motor ii. Linear Induction Motor(LIM) iii. Reluctance motor iv. Hysteresis motor v. Ac series/ Universal motor	5	5.1 Perform a test on AC servo motor to plot speed torque characteristics. 5.2 Demonstrate the working of a simple LIM.	2 2	
Number of periods planned (CI + LI) : 09 Number of periods actually taken :				

Number of Total periods planned : 54

Number of Total periods actually taken :

Subject Teacher : AJAY KUMAR SWARNKAR

(Name and Signature)

HOD
(Department of Electrical Engineering)

Principal
Govt Co-ed Polytechnic , Bastar

GOVERNMENT CO-ED POLYTECHNIC, JAGDALPUR BASTAR(C.G)
DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Session:- APR MAY 2026

Semester:- 4th

Session start date as per University Calendar:- 05/03/2026

Course Name:- Electrical Power Generation Transmission and Distribution

Unit-1.0 Hydroelectric Power Plant			
Laboratory Instruction (LI)	No. of Periods	Class room Instruction(CI)	No. of Periods
LE1.1 Demonstrate Hydroelectric Power Plant using an animated model.		1.1 Various sources of Electrical Power Generation: Hydro, thermal, nuclear, solar, wind, bio-mass, geo thermal, OTEC, etc.	
LE1.2 Draw the line diagram of HPS and main cycles.		1.2 Hydroelectric power station (HPS): Energy conversion process, plant layout.	
		1.3 Hydrograph and simple calculation of electrical power generation, choice of site and constituents of hydroelectric power plant	
		1.4 Classification of HPS- based on; - Head -Storage and pondage -Plant layout, types of hydro turbines -Auxiliaries	
		1.5 Synchronous Generators in HPS: Selection, number of poles, rotor speed and diameter.	
Number of periods planned (CI+LI+SW+SL) =14			
Number of periods actually taken :			

Unit-2.0 Thermal and Nuclear Power Station			
Laboratory Instruction (LI)	No. of Periods	Class room Instruction(CI)	No. of Periods
LE2.1 Demonstrate the thermal power plant using an animated model.		2.1 Thermal power station: Energy conversion process, plant layout , site selection.	
LE2.2 Draw the line diagram of thermal power station and main cycles.		2.2 Major equipment and auxiliaries of TPS : Boiler, steam turbine, Turbo Generator, super heater, economizer and electrostatic precipitator, etc)	
LE2.3 Demonstrate nuclear power station using an animated model.		2.3 NPS: Energy conversion process, Constituents of NPS and Layout, Selection of site	
		2.4 Reactors : main parts, types and control	
LE2.3 Demonstrate nuclear power station using an animated model.		2.5 Nuclear Fuel	
Number of periods planned (CI+LI+SW+SL) =14			
Number of periods actually taken :			

Unit-3.0 Variable Load on Generating Stations			
Laboratory Instruction (LI)	No. of Periods	Class room Instruction(CI)	No. of Periods
LE3.1 Prepare a load curve for the complete calendar year of your institution electrical load and analyze it.		3.1 Structure of electrical power system.	
LE3.2 Prepare a load duration curve for the above data in		3.2 Connected load, Maximum demand, average demand, Demand factor, load factor, diversity factor, plant capacity factor and plant use factor and related numerical.	
		3.3 Load curve and Load duration curve.	

		3.4 Base load and peak load on	
		3.5 Relationship between units generated per year, maximum demand and Load factor.	
		3.6	
		3.7 Cost of electrical energy and related numerical problems.	
Number of periods planned (CI+LI+SW+SL) =15			
Number of periods actually taken :			

Unit-4.0 Transmission Line- Parameters and performance			
Laboratory Instruction (LI)	No. of Periods	Class room Instruction(CI)	No. of Periods
LE4.1 Determine Transmission line parameters (R, L, C) using a simulated transmission line model.		4.1 Transmission line parameters: Resistances, inductances and capacitances.	
		4.2 Skin effect and effect of proximity.	
LE4.2 Determine voltage regulation and power transfer capability of a transmission system using simulated transmission line model.		4.3 Stranding and transposition of conductors.	
		4.4 Classification of transmission lines – Short, medium and long.	
		4.5 Equivalent circuits, T and π networks, ABCD constants, Ferranti effect, line losses.	
LE4.3 Determine ABCD parameters of a given transmission line using simulated Transmission line model.		4.6 Line insulators: requirements, types, Failure of insulators. 4.7 String efficiency, methods of improving string efficiency (simple numerical)	
Number of periods planned (CI+LI+SW+SL) =16			
Number of periods actually taken :			

Unit-5.0 Distribution System

Laboratory Instruction (LI)	No. of Periods	Class room Instruction(CI)	No. of Periods
LE5.1 Prepare a report based on survey of the connected loads in your institute premise and find the relevant specifications of different switches, MCBs and panels and compare it with those already installed.		5.1 Feeders, distributors and service mains	
		5.2 Selection of conductor size based on current for distribution systems	
		5.3 Voltage drops in D.C. distributors	
LE5.2 Prepare a report on distribution system of your institute.		5.4 Voltages drop in A.C. distributors.	
LE5.3 Test the continuity of power cable.		5.5 Types of underground power cables	
		5.6 Construction of power cables	
		5.7 Selection of power Cables for LT and HT connections.	
		5.8 Selection of power Cables for LT and HT connections.	
		5.9 Faults in Power cables	

Number of periods planned (CI+LI+SW+SL) =16

Number of periods actually taken :

Number of Total periods planned : 75

Number of Total periods actually taken :

Subject Teacher :


HOD

(Department of Electrical Engineering)

GOVT. CO-ED POLYTECHNIC JAGDALPUR
ADAWAL, DIST - BASTAR (C.G.) 494001
DEPARTMENT OF ELECTRICAL ENGINEERING
LESSON PLAN **SESSION-(MAY - JUNE) 2026**

NAME OF FACULTY : TEJESHVARYA

SUBJECT : ELECTRICAL ESTIMATION AND COSTING

SUBJECT CODE : 2000455(024)

SEMESTER : DIPLOMA IV(SEM)

TEXT BOOKS **A COURSE IN ELECTRICAL INSTALLATION ESTIMATION AND COSTING:J B GUPTA**
ELECTRICAL WIRING , ESTIMATING AND COSTING:UPPAL,S.L.,G.C.GARG

REF. BOOKS **ELECTRICAL COSTING ,ESTIMATING AND CONTRACTING:BIHATTACHARYA,S.K.**
ELECTRICAL DESIGN ESTIMATION AND COSTING:RAINA K B, BIHATTACHARYA

LECT. NO.	UNIT	TOPIC TO BE COVERED		
		Unit-1.0 Electrical Wiring		
1	1	1.1 Wiring system, Types of wires,		
2		1.2 Specifications of Different types of wiring materials, Accessories		
3		1.3 Selection of material for wiring work.		
4		1.4 Wiring tools.		
5		1.5 Wiring circuits.		
6		1.6 Point wiring system (Short, Medium and Long)		
7		1.7 Service line: single phase, three phase		
8		1.8 Domestic and industrial panel wiring.		
9		1.9 IE Act-2003., I.E. rules for wiring.		
		Unit-2.0 Estimating and Costing Practices		
10	2	2.1 Estimation and estimation tools,		
11		2.2 Electrical Schedule of rates, catalogues, Survey and source selection, measurement book		
12		2.3 Quantity and cost of material required,		
13		2.4 Purchase system including Gen, Purchase enquiry and selection of purchase mode, Comparative statement, Purchase orders, verification of bills		
14		2.5 Contract system.		
15		2.6 Tendering procedure and preparation of simple tender, Earnest Money, Security Deposit		
		Unit-3.0 Estimation and Costing of residential and industrial wiring		
16	3	Residential wiring		
17		3.1 Layout		
18		3.2 Load calculation		
19		3.3 Wire, switchgear, Cable and other accessories & fixture/fitting selection		
20		3.4 Earthing system		
21		3.5 Overall Estimating and costing Commercial and industrial wiring		
22		3.6 Layout		
23		3.7 Load calculation		
24		3.8 Wire, switchgear, Cable and other accessories & fixture/fitting selection		
25		3.9 Earthing system		
		Unit-4.0 Estimation and costing of Overhead and Underground Distribution System		
26	4	4.1 Overhead distribution system.		
27		4.2 Materials and accessories required for the overhead distribution system		

LECT. No	UNIT	TOPIC TO BE COVERED		
28	4	4.3 Distribution lines, Line supports, Factors governing height of pole,		
29		4.4 Conductor materials, size of conductor for overhead line, conductor's configuration, spacing and clearances, span lengths.		
30		4.5 Cross arms, pole brackets, clamps, guys and stays, setting of stays.		
31		4.6 Overhead line insulators, insulator materials, lightning arrestors, erection of supports.		
32		4.7 Earthing of lines, Guarding of overhead lines, Clearances of conductor from ground, Spacing between supports conductors.		
33		4.8 I.E. rules pertaining to LV distribution lines		
34		4.9 Estimate for 440 V, 3-phase, 4 wires or 3 wires overhead distribution system.		
35		4.11 Method of installation of service connection(1-phase and 3-phase).		
36		4.12 I.E. rules pertaining to overhead lines and service connection		
37		4.13 Underground distribution system.		
38		4.14 Materials and accessories required for underground distribution system.		
39		4.15 Estimate for 440 V, 3-phase, 4 wires or 3 wires underground distribution system.		
40		4.16 I.E. rules pertaining to underground system and service connection.		
41		4.10 Types of service connections		
		5	Unit-5.0 Estimation and Costing of Repair and Maintenance of Electrical Equipment and appliances	
42	5.1 D.O.L. starter, small motor, mono block pump, automatic electric iron, table/ceiling fan, ICDP/ICTP Switch, etc.			
43	5.2 Operating Manuals, service manuals and drawing work of the product/equipment.			
44	5.3 Storage of consumables/spare parts of the equipment.			
45	5.4 Estimation of repairing cost and overall cost.			
46	5.5 Tools used for repairs & maintenance work			
47	5.6 Preparation of cost schedule for repair and maintenance of; - Electric fan. - Automatic electric iron. - Single phase transformer. FHP motors Mixer grinder, D.O.L. Starter.			
TOTAL CLASSES SCHEDULED : 42				
TOTAL CLASSES TAKEN:			Signature of Faculty	IOD Signature

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Lesson Plan

Course Title:- Computer Programming and Basic Networking

Course Code:- 2025473 (022)

Branch:- Electrical

Semester:- 4th

Lecture no.	Topics	No. of Classes Required	Remarks
1	Introduction about the subject	1	1st Unit (L+P= 13)
2	Program logic development using Algorithm and Flowchart	1	
3	Algorithm-Developing and writing algorithm using pseudo Codes	2	
4	Flowchart- Definition and Importance of flowchart, Symbols of Flowchart, Flow lines, Terminals, Input/output, Processing, Decision, Connection off-page connectors, Limitation of flowchart	4	
5	Basic structure of 'C' Program	1	
6	Data Concepts Character set, C Tokens, Keywords and Identifiers, Constants, variables and its Declaration	1	
7	Data Types ,Operators and its types	1	
8	Input/Output Functions	2	

9	Introduction of decision making statements in 'C'	1	2nd Unit (L+P=16)
10	Decision making with IF statement, Simple IF statement, The IF.... ELSE statement, Nesting of IF.... ELSE statement, The ELSE IF ladder	3	
11	The Switch statement	2	
12	The?: operator	1	
13	GOTO statement	1	
14	Introduction, The WHILE Statement, The DO...WHILE Statement	4	
15	The FOR statement, The BREAK and CONTINUE statement	4	

16	Concept and need of functions	3	3rd Unit (L+P=7)
17	Library functions: Math functions, String handling functions, other miscellaneous functions.	4	

18	Declaring and initializing One- Dimensional Array	3	4th Unit (L+P=08)
19	Array Operations-Insertion, Searching, deletion, string operation, Concatenation of two strings.	5	

20	Definition & history of networks,	1	5th Unit (L+P= 13)
21	Application of Computer Networks	1	
22	Standard Organizations and Protocols, Line configuration	1	
23	Network Topology, Categories of network	2	
24	OSI model and its main function, feature of each layer	3	
25	TCP/IP model and its main function, feature and protocol of each layer	2	
26	Types of Transmission Media	1	
27	Introduction to Network communication devices	2	

Total No. of classes : 57


Vijay Kumar sarthi
Lecturer (CSE)