Government Polytechnic, Bhatapara (Chhattisgarh)
Department of Civil Engineering
Academic year 2024-2025

Subject: SDD-1
Sub Code: 2020572(020) Semester: 5th
Faculty: Ms.AKANKSHA DESHMUKH Theory Class: 3 Total Class (T+P): 5
ESE: 70 CT: 20 TA:30 Total: 120

Chapter	Unit Name and Topics	Theory Periods Scheduled	Theory periods conducted	DATE	No. Of Tutorial Periods	DATE	Remarks
1	**UNIT -1 RCC AND WSM OF DESIGN**						
	1.1 **Concrete** -S.I. Units, structural components, meaning of R.C.C., purpose of reinforcement	**1**	**1**	**11/9/24**	**-**	**-**	
	1.2 Materials of reinforcement, Steel as a reinforcing material, Type of steel used for reinforcement mild steel, tor steel	**1**			**-**	**-**	
	1.3 Different mixes of concrete to be used for R.C.C. work.	**1**			**-**	**-**	
	1.4 **IS Code 456-2000-** Effective span, Control of defection, Modification factor for Tensile and compressive steel ,Cover to reinforcement	**2**	**1**	**12/9/24**	**-**	**-**	
	1.5 Vertical and horizontal, Spacing of reinforcement ,	**1**	**1**	**18/9/24**	**-**	**-**	
	1.6 Max and min reinforcement , Development length ,Shear reinforcement, Curtailment and bending of bars, Min.	**1**	**1**	**18/9/24**	**-**	**-**	
	1.7 positive and negative reinforcement at support, Min length of reinforcement inside	**1**	**1**	**23/9/24**	**-**	**-**	

	support Live load and dead load.						
	1.8 **Working StressMethod:** Permissible stresses in steel and concrete,	**1**	**1**	**24/9/24**	**-**	**-**	
	1.9 assumption for design in flexure, under reinforced, over reinforced and balanced section, design constants for balanced sections	**1**	**1**	**24/9/24**	**-**	**-**	
	1.10 analysis of singly and doubly reinforced beams	**1**	**1**	**3/10/24**	**-**	**-**	
2							**-**
	2.1 **Limit State Method of Design -** Concept of limit state method, limit state of collapse ,limit state of serviceability,	**1**	**2**	**8/10/24**			
	2.2 characteristic strength of materials ,characteristic load, partial safety factors ,design values, stress-strain curve for concrete and steel	**1**			**-**	**-**	
	2.3Design and drafting of rectangular beams	**1**	**1**	**14/10/24**	**-**	**-**	
	2.4 Limit state of collapse for flexure **,** assumptions, stress block parameters, neutral axis, analysis,	**1**	**1**	**15/10/24**	**-**	**-**	
	2.5design of singly and doubly reinforced section	**1**	**2**	**16/10/24**	**1**	**19/10/24**	
	2.6Limit state of collapse for shear , nominal shear stress, design shear strength of concrete with and without reinforcement ,minimum shear reinforcemen,	**1**	**1**	**17/10/24**	**-**	**-**	

	2.7 Development length & anchorage length: concept and necessity of development length, design bond stress, overlap length , necessity of hook and bend.	**1**	**1**	**21/10/24**	**-**	**-**	
	2.8 Design singly and doubly reinforced beam	**1**	**2**	**22/10/24**	**-**	**-**	
	2.9 check for deflection, cracking and anchorage length.	**1**			**-**	**-**	
	2.10 Design of lintels – loading on lintel, design of lintel and lintel with chajja,	**1**	**2**	**24/10/24**	**-**	**-**	
3	**UNIT-3 DESIGN OF FLANGED BEAMS, SLABS, COUNTINOUS**						
	3.1 Flanged beam- Properties of flanged beams, moment of resistance	**1**	**1**	**11/11/24**	**-**	**-**	
	3.2 design of singly reinforced Flanged beam.	**2**	**2**	**13/11/24**	**-**	**-**	
	3.3Design of slabs : Dead loads, imposed loads,	**1**	**1**	**14/11/24**	**-**	**-**	
	3.4 Thickness of slabs, modification factors, effective span, reinforcement in slab						
	3.5 design of one way slab and two way slabs,.	**1**	**1**	**14/11/24**	**1**	**16/11/24**	
	3.6 check for cracking, check for development length. .	**1**	**1**	**18/11/24**	**-**	**-**	
	3.7 Design and drafting of one way simply supported slab	**1**	**1**	**18/11/24**	**-**	**-**	
	3.8 One way continuous slab – effective span, bending moment and shear force coefficient, design	**2**	**2**	**19/11/24**	**-**	**-**	
	3.9 drafting of three span continuous slab						

	3.7 Two way slab – design and drafting simply supported slab on for sides	**2**	**2**	**20/11/24**	**-**	**-**	
4	**UNIT-4 COLUMN & COLUMN FOOTING**						
	4.1 Types of column- short and long column, axially loaded column,	**1**	**1**	**21/11/24**	**-**	**-**	
	4.2 columns subjected to bending, effective length, slenderness limit, minimum eccentricity				**-**	**-**	
	4.3 IS code provisions for longitudinal and lateral reinforcement, ultimate load for axially loaded columns.	**1**	**1**	**25/11/24**	**-**	**-**	
	4.4columns with helical reinforcement, assumptions made for limit state design of column, axial ultimate on a column						
	4.5. design and drafting of axially loaded square, rectangular and circular columns.	**1**	**2**	**26/11/24**	**1**	**30/11/24**	
	4.6 Isolated footing, square and rectangular sloped footing	**1**	**1**	**27/11/24**	**-**	**-**	
	4.7 design principles for column footing, thickness of footing	**1**			**-**	**-**	
	4.8 , design for one way shear, design for two way shear or punching shear	**2**	**2**	**28/11/24**	**-**	**-**	
	4.9 design for flexure, design for load transfer at column base, design of square, rectangular, circular pad and sloped footing.	**2**	**2**	**3/12/24**	**-**	**-**	

5	**UNIT-5 DESIGN OF STAIR CASE AND PRESTRESSED CONCRETE**						
	5.1**Design of Stair Case –** Components of stair	**1**	**1**	**4/12/24**	**-**	**-**	
	5.2 IS code provisions for design of staircase	**1**					
	5.3 geometrical classification of stair case						
	5.4 structural classification of stair, effective span and loading for stairs	**1**	**1**	**4/12/24**	**-**	**-**	
	5.5 Design and drafting straight , cantilever stair	**1**	**2**	**5/12/24**	**-**	**-**	
	5.6 Design doglegged stair case and open newel staircase.	**2**					
	5.7 Principles of pre-stressing, materials for presressed concrete	**1**	**1**	**6/12/24**	**-**	**-**	
	5.8 Methods of prestressing	**1**	**1**	**6/12/24**	**-**	**-**	
	5.9Advantages and disadvantages of prestressing .	**1**					

Total Theory Periods:48 **Total Tutorial Periods: 06** **Total Periods:42**

Faculty incharge: Ms. AKANKSHA DESHMUKH

In charge HOD:UPENDRA KUMAR PATEL

Government Polytechnic, Bhatapara (Chhattisgarh)
Department of Civil Engineering
Academic year 2024-2025

Subject :STRUCTURAL DESIGN AND DRAFTING -II

Sub Code: 2020672(20) **Semester:**

6thFaculty: Ms. AKANKSHA DESHMUKHTheory Class: 3 Total Class (T+P): 5

ESE: 70 CT: 20 TA:30 Total: 120

Chapter	Unit Name and Topics	Theory Periods Scheduled	Theory periods conducted	DATE	No. Of Tutorial Periods	DATE	Remarks
1	**UNIT -1INTRODUCTION TO IS:800-2007 WORKING STRESS METHOD AND PLASTIC ANALYSIS**						
	1.1Introduction to IS: 800 – 2007Structural steel and properties of structural steel, Standard structural steel sections	**2**	**1**	**21/1/2025**			
	1.2 **Permissible stresses in structural steel**	**1**	**1**	**21/1/2025**			
	1.3Limit state design,Limit state of strength, Limit state of serviceability	**1**					
	1.4 **Action (loads), Design strength, Partial safety factor for materials**	**1**	**2**	**23/1/2025**			
	1.5 **Loads, Load combination and partial safety factors for loads. Maximum**	**2**					

	effective slenderness ratio						
	1.6 **Introduction to Working Stress Method. General design requirements of Working Stress Method** 1.7 **Permissible stresses as per section 11 of IS800-2007** **1.4 Introduction to plastic Analysis**	**2**	**1**	**24/1/2025**			
	1.8 **Introduction to plastic Analysis Assumptions in plastic analysis.**	**1**	**1**	**28/1/2025**			
	1.8 **Plastic moment, shape factor for different common sections, load factor, concept of plastic hinge**	**1**	**1**	**28/1/2025**			
	1.9**Principle of virtual work and calculation of collapse moment for simple beams (simple numerical problems.)**	**1**	**2**	**30/1/2025**			
2	**UNIT -2DESIGN OF BOLTED AND WELDED CONNECTIONS**						
	2.1 **Bolted Connections AND Types of bolts**	**1**	**1**	**31/1/2025**			

	2.2 **Definition of general terms related to bolting, Permissible stresses in bolts**	**1**					
	2.3 **Types of bolted joints Specifications as per IS 800-2007**	**1**	**1**	**4/2/2025**			
	2.4 **Failure of bolted joints, strength and efficiency of bolted joint**	**1**		**4/2/2025**			
	2.5 **Design of Bolted Connections (only axially loaded members**	**1**	**1**	**6/2/2025**			
	2.7 **Welded Connections Definition of terms related to welded joints**	**1**	**1**	**6/2/2025**			
	2.8 **Types of welds Strength of welded joint**	**1**					
	2.9 **Design of welded joints**	**1**	**2**	**14/2/2025**			
3	**UNIT-3 DESIGN OF TENSION AND COMPRESSION MEMBERS**						
	3.1 **Tension Members Types of tension members, Sections used as tension members**	**1**	**1**	**15/2/2025**			
	3.2 **Net sectional area, effective net area, Slenderness Ratio**	**1**	**1**	**15/2/2025**			
1							
	3.3 **Types of failures AND Design of axially loaded tension members**	**1**	**2**	**18/2/2025**			

	3.4 **Compression Members Standard sections used as compression member Effective length and slenderness ratio**	**1**	**1**	**20/2/2025**			
	3.5 **Design compressive stress and strength**	**1**	**1**	**20/2/2025**			
	3.6 Find design strength of strut Design of strut	**1**	**2**	**21/2/2025**			
	3.7 **Design of simple columns and built up columns**	**1**	**1**	**27/2/2025**			
	3.8 **Design of lacings**	**1**	**1**	**27/2/2025**			
	3.9 **Design of battens**	**1**	**1**	**4/3/2025**			
4	**UNIT-4 DESIGN OF COLUMN AND BEAM**						
	4.1 **Types of column bases Slab base and gusseted base**	**1**	**1**	**5/3/2025**			
	4.2 **Design of M.S. Slab base with concrete pedestal.**	**2**	**2**	**11/3/20252**			
	4.3 **Cleat angles, their use only**	**2**	**1**	**12/3/2025**			
	4.4 **Sketch of gusseted base**	**1**	**1**	**17/32025**			
	4.5 **Types of beams**	**1**					
	4.6 **Common sections used as beams**	**1**	**2**	**18/3/2025**			
	4.7 **laterally supported and laterally unsupported beams**	**2**					

	4.8**Web buckling and web crippling**	**1**	**1**	**20/3/2025**			
	4.9**Design of laterally supported beams for flexure, shear and deflection**	**1**	**1**	**21/3/2025**			
	4.10**Design of built up beams (plated beams)**	**1**	**1**	**21/3/2025**			
5	**UNIT-5 ROOF TRUSSES**						
	5.1 **Types of Trusses**	**1**	**1**	**27/3/2025**			
	5.2 **Definitions of terms related to truss**	**1**					
	5.3 **Combination of loads for design of truss Selection of truss**	**2**	**1**	**28/3/2025**			
	5.5 **Design of members of truss Design of purlin**	**1**	**2**	**1/4/2025**			
	5.7 **Detailing of different roof joint purlin connection**	**1**	**1**	**4/4/2025**			

Total Theory Periods: 48 **Total Tutorial Periods: 41** **Total Periods: 41**

Faculty in charge: Ms. AKANKSHA DESHMUKH

In charge HOD: UPENDRA KUMAR PATEL

LESSON PLAN

Government Polytechnic, Bhatapara (Chhattisgarh)
Department of Civil Engineering
Academic year 2024-2025(JULY-DEC-2024)

Subject:GEOTECH ENGINEERING
Sub Code: 2020574(20) Semester: 5th
Faculty:Mr.Manish kumar Raj Theory Class: 3 Total Class (T+P): 5
ESE: 70 CT: 20 TA:30 Total: 120

Chapter	Unit Name and Topics	Theory Periods Schedul ed	Theory periods conduct ed	DATE	No. Of Tutorial Periods	DATE	Remarks
1	**UNIT -1 WEIGHT AND VOLUME RELATIONSHIP, INDEX PROPERTIES AND CLASSIFICATION OF SOIL**						
	1.1 Definition of soil and soil mechanics or Geotechnical Engineering, field application of Geotechnical Engineering	1				11/09/24	
	1.2 Weight and Volume Relationships Soil as a three phase system	1				11/09/24	
	1.3 Types of soil water, water content, Void ratio, porosity and degree of saturation, water content, density	1				12/09/24	P.P.T & Youtube link
	1.4 Approach of effective management for maintenance	1				13/09/24	
	1.5 unit weights, specific gravity ,density index and relative compaction and functional relationship among them	1					
	1.6 Determination of water content, specific gravity and	1					

	bulk density						
	1.7Index Properties And Soil Classification	1				19/09/24	
	1.8Particle size analysis, mechanical sieve analysis	1					
	1.9 Consistency of soil, stages of consistency, Atterberg's limits of consistency, relationship between consistency limits	1				20/09/24	
	1.10 Particle size classification of soils & IS classification of soil.	1					
2	**UNIT -2 PERMEABILITY, WELL HYDRAULICS AND SEEPAGE**						
	2.1 Definition of permeability, Darcy's law of permeability, coefficient of permeability, Factors affecting permeability.	1				23/09/24	P.P.T
	2.2 Determination of coefficient of permeability by constant head and falling head permeability tests.	1				24/09/24	Youtube link shared
	2.3 Aquifer,aquiclude, aquifuge, coefficient of transmissibility	1					
	2.4 Formulae for discharge through unconfined and confined aquifer for steady radial	1				25/09/24	
	2.5Dupuit's Theory (no derivation), field determination of coefficient of permeability and coefficient of transmissibility	1					

	2.6 Permeability and coefficient of transmissibility	1			27/09/24		
	2.7 Seepage through earthen structures, head, gradient and potential, seepage velocity	1			27/09/24		
	2.8 seepage pressure, quick sand condition.	1			]	30/09/24	
	2.9 Flow net, characteristics of flow net, application of flow net (no numerical problems) ,phreatic line.	1					
	UNIT-3 SHEAR STRENGTH OF SOIL						
	3.1 Concept of Shear strength of soil	1			]	04/10/24	P.P.T & Mohr's circle
	3.2 Shear failure of soil	1					
	3.3 Components of shearing resistance of soil	1			7/10/24		
	3.4 Mohr-Coulomb failure theory, Strength envelope, strength equation	1				08/10/24	
3	3.5 Effective stress principle-total pressure, effective pressure, neutral pressure	1					
	3.6 shear strength equation in terms of effective pressure, Mohr's stress circle.	1			]	14/10/24	
	3.7 Determination of shear strength	1				15/10/24	
	3.8 types of shear test	1					

	depending upon drainage condition, Direct shear test					17/10/24	
	3.9 Tri-axial test Unconfined compression test , Vane shear test	1					
	UNIT-4 COMPACTION OF SOIL AND EARTH PRESSURE						
	4.1 Concept of compaction, purpose of compaction field situations where compaction is required.	1				18/10/24	
	4.2 Standard proctor test – test procedure as per IS code, compaction curve, optimum moisture content, maximum dry density, zero air voids line.	1				21/10/24	
	4.3 Modified proctor test	1					
	4.4 Factors affecting compaction	1					
4	4.5 Field methods of compaction – rolling, ramming & vibration and suitability of various compaction Equipments, placement water content, field compaction control.	1				24/10/24	
	4.6 Difference between compaction and consolidation	1				28/10/24	
	4.7 Definition of active earth pressure, Neutral pressure and passive earth pressure	1				6/11/24	
	4.8 Structures subjected to earth pressure in the field	1				8/11/24	
	4.9 Rankine's theory	1					
5	**UNIT-5 BEARING CAPACITY OF SOIL, STABILIZATION OF SOIL AND SITE INVSTIGATION AND SUB SOIL EXPLORATION**						

5.1 Concept of Bearing Capacity of soil ultimate bearing capacity, safe bearing capacity and allowable bearing pressure	1				11/11/24	
5.2 Effect of water table on bearing capacity	1				15/11/24	
5.3 Field methods for determination of bearing capacity – Plate load test and standard penetration test. Test procedures as Per IS:1888 & IS:2131	1			18/11/24		
5.4 Typical values of bearing capacity from building code IS:1904	1				20/11/24	
5.5 Concept of soil stabilization, necessity of soil stabilization	1					
5.6 Different methods of soil stabilization – Mechanical soil stabilization, lime stabilization, cement stabilization, bitumen stabilization, fly-ash stabilization	1				22/11/24	
5.7 Necessity of site investigation & sub-soil exploration	1				26/11/24	
5.8 Method of site exploration open excavation & boring	1			02/12/24 02/12/24	29/11/24	
5.9 Methods of exploration, disturbed & undisturbed soil samples for lab testing.	1				4/12/24	

Total Theory Periods: **Total Tutorial Periods: 00** **Total Periods:** 52

Faculty incharge: Mr. Manish Kumar Raj

LESSON PLAN

Government Polytechnic, Bhatapara (Chhattisgarh)
Department of Civil Engineering
Academic year 2024-2025

Subject : HYDRAULICS
Sub Code : 2020375(020) **Semester: 3rd**
Faculty : Mr.Manish kumar Raj Theory Class: 3 Total Class (L+T+P): 6
ESE: 70 CT: 20 TA:30 Total: 120

Chapter	Unit Name and Topics	Theory Periods Scheduled	Theory periods conducted	DATE	No. Of Tutorial Periods	DATE	Remarks
1	**UNIT -1 1.1 Introduction**						
	1.1.1 Definition of liquid, Ideal liquid and Real liquid	1	2	9,12/09/24			
	1.1.2 Properties of liquid - Mass density, Specific weight, Specific Gravity, Compressibility, Viscosity, Surface Tension, Capillarity,	1	2	13/09/24			
	1.1.3 Branches of hydraulics- Hydro Statics, Hydro Kinematics and Hydro Dynamics.	1	1	19/09/24			
	1.2 Pressure and its measurement 1.2.1 Pressure, Pressure intensity, Variation of pressure with depth of liquid, Pressure head, Effect of shape and size of container on pressure, PASCAL's law.	2	2	19/09/24 20/09/24			
	1.2.2 Atmospheric Pressure, Gauge Pressure, Absolute Pressure, Vacuum Pressure.	1	1				
	1.2.3 Measurement of pressures by different methods – , piezometer, Manometer Differential Manometer and Inverted Differential Manometer, Bourdons pressure gauge.	1	1	23/09/24 24/09/24			
	1.3 Hydrostatics	1	1	25/09/24			

	1.3.1 Total pressure and centre of pressure and pressure distribution diagram			] 26/09/24		
	1.3.2 Computation of Total pressure and centre of pressure on plane horizontal surface, vertical surface and inclined surface.	1	1	] 29/09/24		
	Unit 2.0 **2.1 Hydrokinematics**					
	2.1.1 Types of liquid flow Laminar, Turbulent, Uniform-Non uniform, Steady, Unsteady, and Compressible, Incompressible flow	1	1	30/09/24		
	2.1.2 Rate of flow, Law of conservation of mass, Continuity Equation	2	2	01/10/24		
	2.1.3 Stream line, Path line, Streak Line	2	2	7/10/24 8/10/24		
2	**2.2 Hydrodynamics** 2.2.1 Various forms of energies present in liquid flow - potential energy, kinetic energy, pressure energy, total energy, potential head, kinetic head, pressure head, total head	1	1	8/10/24		P.PT & Venturi line sheet
	2.2.2 Bernoulli's Equation and Limitations of Bernoulli's theorem.	2	2	] 14/10/24		
	2.2.3 Simple Application of Equation of Continuity and Bernoulli's theorem.	1	1	] 15/10/24		
	2.2.4 Pitot Tube	2	1	17/10/24		
	UNIT-3 Flow measurement					
3	**3.1 Ventrimeter-** Components of venturimeter, discharge through venturimeter.	1	2	21/10/24		
	3.2 Orifice meter- Discharge through orifice meter	2	1	24/10/24		

	3.3 Flow through orifice 3.3.1 Definition and types of orifice	2	1	24/10/24			
	3.3.2 Vena Contracta, Various Hydraulic Coefficients Cc, Cv and Cd and relationship between them.	1	1	18/11/24			
	3.3.3 Time required for emptying tank through orifice at the bottom of tank.(No Derivation)	1	2	19/11/24			P. P-T slides
	3.4 Flow through Notches 3.4.1 Definition and Description	2	2	21/11/24			
	3.4.2 Computation of discharge through notches – Rectangular Notch, V – Notch and Trapezoidal Notch.	1	2	25/11/24			
	3.5 Flow through Weirs 3.5.1 Definition and Description	1	1	02/12/24			
	3.5.2 Computation of discharge through weirs - Discharge through Narrow crested and broad Crested weir (No Derivation), Discharge through Cipolletti weir.	2	2	03/12/24			
	UNIT-4 Flow through Pipes						
	4.1 Characteristics of flow through pipes	1	1	5/12/24			Numerical lines slides
4	4.2 Major Energy (Head) losses in pipe Flow Expression for head loss in pipes due to friction and Computation of major head by Darcy Weisbach Equation.	1	2	09/12/24			
	4.3 Minor Energy (Head) losses in pipe Flow loss of head at Sudden enlargement,contraction, entry, exit and at bend.	2	2	10/12/24			
	4.4 Hydraulic Gradient Line (HGL) and Total Energy	2	2	12/12/24			

	Line (TEL) in various cases.						
	4.5 Flow of water from one tank to another by long pipe.	2	1	13/12/24			
	4.6 Flow through pipes in series and parallel						
	UNIT-5 5.1 Flow through Open Channel						
	5.1.1 Open channel flow 5.1.1 Comparison of pipe flow and open channel flow.	1	1	13/12/24			
	5.1.2 Wetted perimeter, Hydraulic mean depth, Hydraulic gradient, Froude number, uniform and non uniform flow	1	1	17/12/24			
	5.1.3 Use of Chezy's and Manning's formulae (No Derivation).	1	1	19/12/24			
	5.1.4 Most economical sections of channel Rectangular, Trapezoidal.	1	1				
5	5.1.5 Specific Energy Diagram, Critical Depth, Critical Velocity, Streaming Flow, Critical Flow ,Shooting Flow, Hydraulic Jump	1	2	28/12/24			
	5.2 Pumps (No numerical and derivations) 5.2.1Definition, description of Centrifugal pump , Reciprocating pump and Submersible Pump.		1				
	5.2.2 Components and working principles of centrifugal pump and Reciprocating pump		1	24/12/24			
	5.2.3 Priming, Selection criteria for pumps.	1	1				

Total Theory Periods : **Total Tutorial Periods :** **Total Periods :** (52) Nos.

Faculty incharge : Mr.MANISH RAJ

In charge HOD :

GOVERNMENT POLYTECHNIC , BHATAPARA

DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Session :- **July - Dec 2024**
Semester :- **3rd**
Session start date as per University Calendar :-**18/09/2024**
Course Name :- **Electrical Drawing and CAD**
Course Code :- **2024374(024)**
Name of Subject teacher :- **Mrs. Sunita Tiwari**

Unit -1 Symbols and Codes

Class Room Instruction	No. Of Periods	Remarks
1.1 ISI Symbols in electrical engineering	3	
1.2 Conventions for circuit and schematic representation of electrical and electronic components, instruments and equipment	3	

Number of periods planned : 6
Number of periods actually taken : 4

Unit – 2 Installation, mounting and layout of power and safety equipment

Class Room Instruction	No. of Periods	Remarks
2.1 Different types of mountings for static(transformers): pole and ground mounted	3	
2.2 Mountings for dynamic equipment (electrical rotating machines)	3	
2.3 Substation layout with circuit breaker, on-load and off-load isolators, Buchholz's relay and other protective devices of transformers up to 2MVA Plate and Pipe earthing Extension of range using shunt, multiplier, CT, PT	4	

Number of periods planned : 10
Number of periods actually taken : 6

Unit -3 Constructional Features of Electrical Machines

Class Room Instruction	No. of Periods	Remarks
3.1 Parts of a transformer up to 2 MVA	1	
3.2 DC Machines: pole, pole shoe, simplex lap and wave winding	1	
3.3 Alternators: salient and cylindrical rotor	1	
3.4 Induction motors: squirrel cage and slip ring	1	
3.5 AC Machine winding: full pitch winding and short pitch winding	2	

Number of periods planned (CI + LI) : 6
Number of periods actually taken : 4

Unit -4 Domestic and Commercial wiring for LV Equipment

Class Room Instruction	No. of Periods	Remarks
4.1 Illumination fixtures: types and Internal circuit diagram	2	
4.2 Control wiring of go down, staircase, street light and for houses Wiring of energy meters for domestic and commercial loads	4	
4.3 Internal Wiring of Refrigerators and Air conditioners Starter, 4-point starter Wiring diagram of submersible and centrifugal pumps	4	

Number of periods planned : 10
Number of periods actually taken : 8

Unit –5 Computed aided electrical drawing(CAD)

Class Room Instruction	No. of Periods	Remarks
5.1 Computer Aided Drawing: Draw command, edit command, Coordinate entry, Osnap, Layers, Dimensioning, Text in a drawing, Ortho command, Zoom command and plot command	4	
5.2 General electrical and electronic symbols, Layouts of domestic,	3	
5.3 Commercial and industrial wiring (2D only) Cross Sectional view of: Fuse and cables (2D) D.C. Motor and their parts Single phase Transformer, Power transformer, Induction Motor, Insulators, Circuit Breakers, Lightning Arresters, 11 kV Pole Mounted Substation Single line diagrams of 11kV/33 kV Substation	6	

Number of periods planned : 13
Number of periods actually taken : 9

Number of Total periods planned : 45
Number of Total periods actually taken : 31

Subject Teacher

HOD

GOVERNMENT POLYTECHNIC, BHATAPARA

DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Session :- **July – Dec 2024**
Semester :- **5th**
Session start date :- **09.09.2024**
Course Name :- **Installation and Maintenance of Electrical Equipment**
Course Code :- **2024574(024)**
Name of Subject teacher :- **Mrs. Sunita Tiwari**

Unit-1.0 Installation of Electrical equipment and machines

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
1.1 Types of heavy electrical equipment	1	**1.1**Identify the different types of installation kits, tools, accessories and equipment.	2	
1.2 Unloading electrical equipment at site. Inspection of electrical equipment at site.	2	**1.2**Unloading electrical equipment at site, Inspection of electrical equipment at site. **1.3** Installation procedures of small and large static equipment.		
1.3 Installation procedures of small and large static equipment.	1	**1.4** Installation procedures of small and large rotating type machine **1.5** Installation of pole mounted transformer	2	
1.4 Installation procedures of small and larger rotating type machine	2			
1.5 Installation of pole mounted transformer	2			

Number of periods planned (CI + LI) : 12
Number of periods actually taken : 10

Unit-2.0 Commissioning of Electrical equipment and Machines

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
2.1 Commissioning procedure to be adopted for commissioning the static equipment in respect of Mechanical installation and alignment.	2	**2.1** Identify the different types of commissioning tools, accessories and instruments. **2.2** Make a report for commissioning of given static machine.	2	
2.2 Commissioning procedure to be adopted for commissioning the static equipment in respect of Electrical tests and safety precautions to be adopted before energization	2			
2.3 Commissioning procedure to be adopted for commissioning the rotating machine in respect of Mechanical installation and alignment.	2			
2.4 Commissioning procedure to be adopted for commissioning the rotating machine in respect of: Electrical tests and safety precautions to be adopted before energization.	1	**2.3** Make a report for commissioning of the given rotating machine **2.4** Make a report for commissioning of pole mounted transformer.	2	
2.5 Test report on commissioning and test certificate	1			

Number of periods planned (CI + LI) : 12

Number of periods actually taken : 10

Unit-3.0 Earthing systems:

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
3.1 Necessity of earthing.	1	**3.1** Prepare drawing of plate/pipe earthing. **3.2** Measure earth Resistance of any Electrical Machine/premises.	2	
3.2 Different methods of earthing.	1			
3.3 Permissible earth resistance value for different electrical installations.	1			
3.4 Factors affecting the earth resistance	2			
3.5 Methods for Improvement of earth resistance.	2	**3.3** Measure earth resistance of a electrical substation	2	
3.6 Measurement of earth resistance	1			

Number of periods planned (CI + LI) : 12

Number of periods actually taken : 12

Unit-4.0 Maintenance of Electrical Machines and Installations

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
4.1 Reason of failure of electrical equipment and machines.	1	4.1 Perform insulation test of transformer oil. 4.2 Prepare preventive maintenance report of distribution transformer installed in college premise	1	
4.2 Methods for drying insulation. Measurement of internal temperature of winding. Need of vacuum impregnation	2			
4.3 Filtering process of insulating oil. Testing of insulating oil 4.4 Concepts of preventive maintenance	2	4.3 Prepare the standard operating procedure for Shut down and Reenergizing of a given electrical equipment to be taken up for preventive maintenance. 4.4 Prepare Preventive maintenance schedule of induction motors in industrial establishment.	1	
4.5 Maintenance schedule for induction motor, DC Motor, transformer, power Distribution line, Circuit breaker and underground cable	2	4.5 Prepare maintenance schedule of 33/11kV O.H.Lines. 4.6 Perform preventive maintenance check for LV Air circuit breaker and Vacuum circuit breaker.	1	
4.6 Tools for hot line maintenance	1	4.7 Measure insulation resistance of a given HV underground cable. 4.8 Identify measurement tools available for conditioning monitoring of electrical equipment.	1	

Number of periods planned (CI + LI) : 12

Number of periods actually taken : 12

Unit – 5.0 Trouble shooting and safety measures

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
5.1 Normal performance of equipment **5.2** Causes of Electrical accidents	1	**5.1** Identify the types of fire fighting equipment used for electrical fires **5.2** Identify the tools and equipment used in installation and maintenance work	2	
5.3 Common faults in electrical equipment; DC Machines, AC Machines, Transformers, Power cables and electrical Installation **5.4** Trouble shooting of internal and external faults; DC Machines, AC Machines, Transformers, Power cables and electrical Installations	3			
5.5 Instruments and accessories for troubles hooting. **5.6** Trouble shooting charts; electrical iron, ceiling fan, wall fan, washing machine, aircooler.	2	**5.3** Prepare Troubleshooting chart of the given equipment **5.4** Undertake drill operation for using fire extinguishers for safety against fire. **5.5** Prepare a report on action to be taken when a person gets attached to a live part.	2	
5.7 Safety regulation and safety measures **5.8** Treatment of shock	1			
5.9 Different types of Fire extinguishers	1			

Number of periods planned (CI + LI) : 12

Number of periods actually taken : 12

Number of periods planned : 60

Number of periods actually taken : 56

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