GOVERNMENT POLYTECHNIC, BHATAPARA

DEPARTMENT OF ELECTRICAL ENGINEERING

LESSON PLAN

Session :- **July - Dec 2024**
Semester:- **3rd**
Session start date as per University Calendar:-
Course Name :- **Elecrical Circuit**
Course Code :- **2024371(024)**
Name of Subject teacher:- **Bhupendra Kumar Dewangan**

Unit -1 Principles of Electrical Circuit

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
1.1 Classification Of Electrical Elements: Active & Passive, Unilateral and bilateral, Independent and Dependent Source	1	**1.1** Indentify the commonly used components and materials in an electric circuit. **1.2** Observe Voltage and Current in an incandescent lamp and comment on your observation. **1.3** Measure Voltage and current in a given linear electric circuit.	2	
1.2 Passive Element/Components(R,L and C) : Steady State behavior in DC Circuit	2			
1.3 Simple Series and Parallel Resistive Circuit	1	**1.4** Measure current and voltage in a particular branch of the given electrical circuit using kirchhoff's Current Law. **1.5** Measure voltage Drop in a closed loop of the given electrical circuit using kirchhoff's Voltage Law 1.6 Determine the current and voltage in a given electrical Circuit.	2	
1.4 Ohm's Law, Kirchhoff's Voltage and Current Law	2			
1.5 Numerical	2			
1.6 Source Transformation	1			
1.7 Mesh & Nodal Analysis	2			

Number of periods planned (CI + LI) : 15
Number of periods actually taken : 12

Unit – 2 Circuit Analysis and Network Theorems

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
2.1 Star Delta Transformation of Passive Network	1	**2.1** Connect star connected resistance to its equivalent Delta connection and determine the equivalent resistance. **2.2** Connect Delta connected resistance to its equivalent Star connection and determine the equivalent resistance. **2.3** Measure Current through and voltage across a circuit element of a given electric Circuit and verify applying mesh and nodal Analysis.	2	
2.2 Superposition Theorem	1			
2.3 Thevenin's Theorem	1			
2.4 Norton's Theorem	1			
2.5 Maximum Power Transfer Theorem	1			
2.6 Application of Theorem to Solve DC Network	6			
		2.4 Measure current in a branch of the given electrical circuit having two or more input sources using Super position theorem. **2.5** Measure load current in the load resistance using Thevenin's theorem in a given circuit. **2.6** Measure load current in the load resistance using Norton's theorem in a given circuit. **2.7** Determine the maximum power and load resistance for which circuit has maximum power using maximum power transfer theorem.	2	

Number of periods planned (CI + LI) : 15
Number of periods actually taken : 13

Unit – 3 Single Phase AC Circuit

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
3.1 Generation of an alternating EMF **3.2** AC circuit quantities: Peak value, RMS Value and Average value of a Sinusoidal voltage waveform	1	**3.1** Measure peak value, RMS value, Period and frequency of a sinusoidal voltage using CRO. **3.2** Observe the behavior of current and voltage wave form in CRO for Resistive load and comment on it. **3.3** Observe the behavior of current and voltage wave form in CRO for R-L Load and comment on it.	2	
3.3 J-operator	1			
3.4 AC Series and parallel circuits, Phasor diagrams and impedance triangle **3.5** Active, reactive, apparent power and power factor in RLC circuit.	7	**3.4** Measure voltage, current, power and power factor in a series RLC circuit and draw phasor diagram. **3.5** Measure voltage, current, power and power factor in a RLC parallel circuit and draw phasor diagram. **3.6** Determine the power and power factor in AC circuit using three ammeter methods.	2	
3.6 Vector representation of an alternating quantity, addition, subtraction, multiplication and division.	2			

Number of periods planned (CI + LI) : 15
Number of periods actually taken : 12

Unit – 4 Series and Parallel resonance

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
4.1 Definition of resonance and its importance in electrical circuit	1	**4.1** Determine the current at series resonance. **4.2** Observe the variation of power factor for varying inductance for a series RLC circuit.	1	
4.2 Series and Parallel resonance: Derivation of Resonance frequency and simple numerical.	6			
4.3 Definition: Quality factor, bandwidth and selectivity in series RLC circuit.(No derivations)	1	**4.3** Determine the current at parallel resonance. **4.4** Determine the impedance of a circuit during parallel resonance.	1	
4.4 Effect on current and power factor in series resonance circuit.	2			

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

Unit – 5 Three phase A C circuits

Class Room Instruction (CI)	No. of Periods	Laboratory Instruction (LI)	No. of Periods	Remark
5.1 Generation of three phase voltage	1	**5.1** Measure the line/phase current, line voltage/phase voltage for the given three phase load connected to a three phase source.	1	
5.2 Three phase three wire source and three phase four wire source, Phase sequence and phasor diagram	2			
5.3 Connection of three phase winding in Star/Delta	2	**5.2** Measure neutral displacement voltage of the given three phase unbalanced load connected to a three phase source Measure three phase power for the given star connected load.	1	
5.4 Line and phase electrical quantity relationship: Star/Delta	4			
5.5 Three phase load: Balanced /Unbalanced	1			
5.6 Measurement of power in three phase circuits	4	**5.3** Measure three phase power for the given star/delta connected load.	2	

Number of periods planned (CI + LI) : 18
Number of periods actually taken : 15

Number of Total periods planned : 75
Number of Total periods actually taken : 62

Subject Teacher

HOD

1. **Name of the Institute** — **GOVT POLYTECHNIC, BHATAPARA**
2. **Name of the department** — Electrical Engineering
3. **Name of the Teacher** — Mr. Bhupendra Dewangan
4. **Title of the course** — **Power System Operation& Protection**
5. **Course Code** — **2024572(024)**
6. **Credits** — **5**

Course Outcomes (Cos)	**CO-1** Represent the power system components in p.u. system.
	CO-2 Implement methods to regulate the power system stability.
	CO-3 Apply various stragies for active and reactive power control.
	CO-4 Identify elements of protection and circuit interrupting devices.
	CO-5 select suitable protective relays ,circuits breakers for protection of alternators,transformers and motors.

Session: July-Dec.2024 **Semester: 5th** **Class room instruction start Date: 18/09/2024**

Session Outcomes	Class room instruction topics	No. of periods planned	Theory/Tutorial/Doubts/Quiz/Content coverage beyond syllabus/Remedial classes	Learning Resources	Remarks
UNIT 1: Representation of Power system. **SO 1.1** Represent an interconnected synchronous generator with sending end and receiving end transformers and end loads using single line diagram	Single line representation of a simple power system with standard symbols.	1	Theory	Book & Internet/ Lecture Notes	
	Single Phase representation of balanced three phase networks	1	Theory	Book & Internet/ Lecture Notes	
	Per unit (PU system) : Introduction, representation, change of base and simple numerical	1	Theory	Book & Internet/ Lecture Notes	
	Tutorial No 1	1	Tutorial 1		
SO 1.2 Represent a given three phase balanced system by single phase equivalent network	Complex power flow, Concept of torque or Load angle (δ) and Power factor angle (θ)	1	Theory	Book & Internet/ Lecture Notes	
	Tutotrial No 2	1	Tutorial-2	Discussion	
SO 1.3 Calculate the p.u. values of a power system parameter	Simplified representation of Synchronous Machines	1	Theory	Book & Internet/ Lecture Notes	
	Power angle curve of a synchronous generator	1	Theory	Book & Internet/ Lecture Notes	

UNIT 2: Power System faults and Stability **SO 2.1** Differentiate symmetrical and unsymmetrical faults in Transmission lines	Symmetrical Faults: Definition of transients in a transmission lines, Sub- transient, transient and steady state period; reactance offered, LLL and LLLG faults	1	Theory	Book & Internet/ Lecture Notes	
	Short Circuit Capacity (SCC) of a bus, Simple Numerical	1	Theory	Book & Internet/ Lecture Notes	
	Tutorial No 4	1	Tutorial No 3	Discussion	
SO 2.2 Analyze the unsymmetrical faults (LG, LL & LLG)	Unsymmetrical faults : LG, LL, LLG faults and their effects	1	Theory	Book & Internet/ Lecture Notes	
	Stability: Introduction, Steady state and transients stability, Stability limit	1	Theory	Book & Internet/ Lecture Notes	
SO2.3 Explain the concept of sequence impedance	Stability: Introduction, Steady state and transients stability, Stability limit	1	Theory	Book & Internet/ Lecture Notes	
		1	Theory	Book & Internet/ Lecture Notes	
		1	Assignment – 1 and 2	Discussion	
		1	Quizzes conducted – 1 and 2	Discussion	
UNIT 3 Active and Reactive Power Control **SO 3.1** concept of real and reactive power transfer in transmission lines	Introduction to active and reactive power in power system and their sources	1	Theory	Book & Internet/ Lecture Notes	
	Requirement of reactive power in power system.	1	Theory	Book & Internet/ Lecture Notes	
	Tutorial No 5	1	Tutorial No 5	Discussion	
SO 3.2 Explain the need to control transmission line voltages	Effect of DC excitation on lagging and leading of a synchronous machine.	1	Theory	Book & Internet/ Lecture Notes	
	V curve of a synchronous machine.	1	Theory	Book & Internet/ Lecture Notes	

SO 3.3 Distinguish the applicationof Series, shunt,series-shunt FACTcontrollers with its strengths and limitations	Voltage control in power system: shunt reactor, synchronous phase modifier	1	Theory	Book & Internet/ Lecture Notes	
	shunt capacitors, series capacitors, static VAR system	1	Theory	Book & Internet/ Lecture Notes	
	Tutorial No 6	1	Tutorial No 6	Discussion	
UNIT 4: Elements of Protection and Circuit Interrupting Devices **SO 4.1**. Describe the functions of basic elements of a protective system	Basic elements of a protective system	1	Theory	Book & Internet/ Lecture Notes	
	Types, causes and effects of various Faults	1	Theory	Book & Internet/ Lecture Notes	
	Protection zones : Backup protection zones	1	Theory	Book & Internet/ Lecture Notes	
SO 4.2 Explain the use of CT and PT in protection system	CT and PT: Specifications and Connection diagram (single phase and 3 phase	1	Theory	Book & Internet/ Lecture Notes	
	Current limiting reactors.	1	Theory	Book & Internet/ Lecture Notes	
	Neutral Earthing	1	Theory	Book & Internet/ Lecture Notes	
SO 4.3 Describe protective system showing different circuit interrupting devices using a line diagram.	Interrupting devices: Sequence of operation and interlocking	1	Theory	Book & Internet/Lec ture Notes	
	Isolators and Fuses: types, features, testing and applications	2	Theory	Book & Internet/Lec ture Notes	
		1	Assignment -3 and 4	Discussion	
SO 4.4 Explain arc formation and zero current interruption	Construction, working and testing of circuit breakers: Air break, Air Blast	1	Theory	Book & Internet/ Lecture Notes	
	Construction, working and testing of circuit breakers : Hexa Fluoride (SF6), vacuum	1	Theory	Book & Internet/ Lecture Notes	

	Construction, working and testing of circuit breakers:	1	Theory	Book & Internet/ Lecture Notes	
	Auto-reclosure, Arc phenomena and extinction	1	Theory	Book & Internet/ Lecture Notes	
SO 4.5 Compare arc quenching in A.C. and D.C. circuit breaker.	HVDC: Working principle of arc quenching in HVDC circuit breaker	1	Theory	Book & Internet/ Lecture Notes	
		1	Assignment -5 and 6	Discussion	
SO 4.6: Explain the resistance switching for the given situation.	Resistance switching	1	Theory	Book & Internet/ Lecture Notes	
	Tutorial No 7	1	Tutorial No 7	Discussion	
UNIT 5 Protective Relays and Circuit Breaker **SO 5.1** Explain the terms related to relays	Protective relay: Principle of working, construction and operation of electromagnetic induction (shaded pole, watt-hour meter and induction cup), Settings	2	Theory	Book & Internet/ Lecture Notes	
SO 5.2 Describe need for different types of relays	Relay Types: Thermal relay, Directional relay, Distance relay (impedance, reactance and mho) Negative phase sequence relay, Static relay, Microprocessor based relay: Principle and working of.	2	Theory	Book & Internet/ Lecture Notes	
SO 5.3 Carryout testing of given relays **SO 5.4** Explain the various faults and abnormalities in alternator. And in motor and their protection schemes.	Maintenance and testing of relays	1	Theory	Book & Internet/ Lecture Notes	
	Various faults and abnormal operating conditions in Alternator and its protection schemes	1	Theory	Book & Internet /Lecture Notes	
	Various faults and abnormal occurring in the Motor and its	1	Theory	Book & Internet Lecture	

	protection schemes				
SO 5.5 Explain various protection schemes for transformer	Differential Protection of Bus Bars Over current, Percentage differential and restricted earth fault protection of Transformers	2	Theory	Notes Book & Internet/ Lecture Notes	
	Inrush phenomenon and over fluxing phenomenon in Transformer	1	Theory	Book & Internet/ Lecture Notes	
	Buchholz Relay, analysis of trapped gases	1	Theory	Book & Internet/ Lecture Notes	
SO 5.6 Describe the protection scheme for transmission line.	Protection scheme - Overload protection, Over-current and earth fault protection, Time graded and current graded protection, Current balance differential protection	1	Theory	Book & Internet/ Lecture Notes	
	Carrier aided protection, Carrier inter-tripping, acceleration and blocking scheme	1	Theory	Book & Internet/ Lecture Notes	
	Distance /Impedance protection, Auto reclosing	1	Theory	Book & Internet/ Lecture Notes	
SO 5.7 Explain protection of given feeders and ring mains and Bus bar	Protection of parallel feeders and Ring Mains	1	Theory	Book & Internet/ Lecture Notes	
		1	Assignment -7	Discussion	
		1	Quizzes conducted -3,4, and 5	Discussion	

Sign of Teacher

HOD

1. **Name of the Institute** — **GOVT POLYTECHNIC, BHATAPARA**
2. **Name of the department** — Electrical Engineering
3. **Name of the Teacher** — Bhupendra Dewangan
4. **Title of the course** — **AC MACHINES**
5. **Course Code** — **2024472(024)**
6. **Credits** — **5**
7. **Contact hours** — **5** Classes/week (Total approx. **80** classes during semester)

Course Outcomes (Cos)	**CO-1 Synchronize an alternator with bus bar/another alternator.**
	CO-2 Use synchronous motor for industrial applications.
	CO-3 Test the performance of Three-phase induction motor.
	CO-4 Maintain single phase induction motors.
	CO-5 Use special electrical machines for different applications.

Session: JAN-JUNE 2025 **Semester: FORTH** **Class room instruction start Date: 29.01.2025**

Session Outcomes	Class room instruction topics	No. of periods planned	Actual number of periods taken	Theory/Tutorial/Doubts/Quiz/Content coverage beyond syllabus/Remedial classes	Learning Resources	Remarks
UNIT 1: Alternators **SO 1.1**Explain the working of the given Alternator.	Types and applications	1	1	Theory	Book & Internet/Lecture Notes	
	Construction-Salient and Cylindrical rotor.	2	1	Theory	Book & Internet/Lecture Notes	
	Cooling system of alternator Maintenance of given alternators	2	2	Theory	Book & Internet/Lecture Notes	
	Tutorial No 1	1	1	Tutorial 1	Discussion	
SO 1.2 Derive EMF equation	Equivalent circuit and phasor diagram	2	2	Theory	Book & Internet/Lecture Notes	
	Voltage equation	2	1	Theory	Book & Internet/Lecture Notes	
SO 1.3 Determine the voltage regulation of the given alternator by synchronous impedance	Voltage regulation by synchronous impedance method, Open Circuit, Short Circuit characteristics	3	2	Theory	Book & Internet/Lecture Notes	
SO 1.4 Synchronize the given alternator with infinite bus bar or another alternator.	Synchronization and conditions of synchronization	2	1	Theory	Book & Internet/Lecture Notes	

	Synchronization of alternator with bus bar/alternator: two bright and one dark lamp method	1	1	Theory	Book & Internet/Lecture Notes	
	Tutorial No 2	1	1	Tutorial - 2	Discussion	
UNIT 2: Synchronous Motor **SO 2.1** Describe the given method(s) of starting synchronous motor	Working principle	2	1	Theory	Book & Internet/Lecture Notes	
	Starting methods. Equivalent circuit and phasor diagram	3	1	Theory	Book & Internet/Lecture Notes	
	Tutorial No 3	1	1	Tutorial - 3	Discussion	
SO 2.2 Differentiate synchronous and induction motor on the basis of the given criteria.	Effect of change in excitation and pf- 'V' and inverted 'V' curves	3	2	Theory	Book & Internet/Lecture Notes	
	Applications of Synchronous motor - Synchronous condenser and constant speed	2	1	Theory	Book & Internet/Lecture Notes	
SO 2.3 Describe General maintenance procedure of the given 3phasesynchronous motor	Hunting and its prevention	2	1	Theory	Book & Internet/Lecture Notes	
	Maintenance of synchronous motors	1	1	Theory	Book & Internet/Lecture Notes	
	Tutorial No 4	1	1	Tutorial - 4	Discussion	
UNIT 3: Three Phase Induction Motors **SO 3.1** Describe the functions of the different parts of the given types of three phase induction motor.	Construction, types Squirrel cage - Single, double cage, Wound rotor	2	1	Theory	Book &Internet/Lecture Notes	
	Tutorial No 5	1	1	Tutorial No 5	Discussion	
SO 3.2 Identify the given Induction machine on the	Working principle, Torque-Slip curve, equivalent circuit	3	2	Theory	Book & Internet/Lecture Notes	

basis of rotor.	and phasor diagram					
	Tutorial No 6	1	1	Tutorial No 6	Discussion	
SO 3.3 Explain torque Slip characteristics of the given three phase induction motor	Torque equation, Starting, running and condition for the maximum torque	2	2	Theory	Book & Internet/Lecture Notes	
	Necessary of starter and types of starters-DOL, Star delta, Autotransformer type and Rotor resistance starter.	2	2	Theory	Book & Internet/Lecture Notes	
	No load and Blocked rotor test, Losses and efficiency	2	2	Theory	Book & Internet/Lecture Notes	
SO 3.4 Explain the given method (s) of controlling the speed of the three phase induction motor.	Speed control of squirrel cage and slip ring induction motor	2	2	Theory	Book & Internet/Lecture Notes	
	Tutorial No 7	1	1	Tutorial No 7	Discussion	
SO3.5 Explain the maintenance procedure of the given 3 phase induction motor	Maintenance of different types of induction motors	2	1	Theory	Book & Internet/Lecture Notes	
UNIT 4: Single Phase Induction Motor SO 4.1 Describe the working of the given single phase induction motor.	Construction, working and types based on starting methods: split phase-Resistance Start, Capacitor start, Capacitor start capacitor run, Shaded pole induction motor	3	2	Theory	Book & Internet/Lecture Notes	
	Double revolving field theory – equivalent circuit.	2	1	Theory	Book & Internet/Lecture Notes	

SO 4.2 Describe the Troubleshooting procedure of the given single phase induction motor.	Double revolving field theory – equivalent circuit.	3	1	Theory	Book & Internet/Lecture Notes	
	Speed/ torque characteristics	2	1	Theory	Book & Internet/Lecture Notes	
	Tutorial No 8	1	1	Tutorial No 8	Discussion	
SO 4.3 Describe general maintenance procedure of the given single phase induction motor.	Maintenance of different types of single phase motors	2	1	Theory	Book & Internet/Lecture Notes	
UNIT 5: Special electrical machines **SO 5.1** Describe the construction, working and applications of the given special motor.	Construction, working and applications of Special electrical machines	4	3	Theory	Book & Internet/Lecture Notes	
SO 5.2 Explain the speed torque characteristics of the given special motor.	Speed/ torque characteristics of Special electrical machines	6	3	Theory	Book & Internet/Lecture Notes	
	Tutorial No 9	2	2	Tutorial No 9	Discussion	

Total number of classes planned: 75

Total number of classes actually taken: 52

Sign of Teacher

HOD

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

Subject :SURVEYING-1
Sub Code: 2020372(020)Semester: 3th
Faculty: Ms. AKANKSHA DESHMUKH Theory Class: 2 Total Class (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 CHAIN SURVEY**						
	1.1 Introduction to surveying, Plane and Geodetic surveying. Purpose of engineering surveys Principles of surveying	**1**	**1**	**10/9/2024**			
	1.2 Instrument used in chain survey:- Types of chain and tapes, Study of 20m and 30m chain, Metric Chain, Tapes, Arrow, Ranging rod, Offset rod, Open cross staff, optical square, prism square	**1**	**1**	**11/9/2024**			
	1.3Ranging: Direct/indirect/ reciprocal, offsets and recording in field book. Use of line ranger, Chaining on plane and sloping ground	**1**	**2**	**12/9/2024**			
	1.4 **Chain Triangulation**-Principal of Chain Triangulation, Survey Stations, Survey lines Arrangement of survey lines, conditions to be fulfilled by survey lines or survey stations, Recording field book:	**1**	**2**	**18/9/2024**			

Government Polytechnic, Bhatapara (Chhattisgarh)
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	Single line and Double line booking , chain traversing,						
	1.5 Errors in chain surveying and their corrections	**1**	**1**	**25/9/2024**			
	1.6 Symbols and signs to indicate ground features						
2							
	2.1 Traverse Survey – Traversing, Closed and Open Traverse, Name of instruments used for measurement of directions and angles	**1**	**2**	**27/9/2024**			
	2.2 Bearings and Angles – Bearing, Meridian, Types of meridian and bearing, Systems of bearing,.	**1**					
	2.3Conversion of bearings from one system to other, Fore and Back Bearing, Calculation of angles from bearings and bearings from angles	**1**	**1**	**7/10/2024**			
	2.4 Magnetic Compass – Magnetic Compass ,Prismatic Compass, Surveyor's Compass,	**1**	**2**	**16/10/2024**			
	2.5Temporary adjustment of prismatic compass and taking observation, Magnetic dip and declination						

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	2.6Local attraction - causes, detection, errors and corrections, problems on local attraction,	**1**	**2**	**17/10/2024**			
	2.7 magnetic declination and calculation of included angles in a compass traverse, Graphical adjustment of closing error.	**1**					
3	**UNIT-3 LEVELLING**						
	3.1 Levelling- Levelling , Level surfaces,Level Line, Horizontal Plane, Horizontal Line, Vertical Line, Datum, Bench Marks, Reduced Level, Mean Sea Level.	**1**	**1**	**21/10/2024**			
	3.2 Levelling Instruments – Dumpy Level, , Tilting Level, Auto Level, Digital Level Leveling Staff, Temporary adjustment of Dumpy Level.	**1**	**2**	**24/10/2024**			
	3.3Terms used in leveling - Line of collimation, Axis of Telescope, Axis of bubble tube, Station, Height of instruments, Back sight, Fore sight, intermediate sight, Change point,Rise,Fall	**1**					

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

Subject :SURVEYING-1
Sub Code: 2020372(020)Semester: 3th
Faculty: Ms. AKANKSHA DESHMUKH Theory Class: 2 Total Class (T+P): 6
ESE: 70 CT: 20 TA:30 Total: 120

	3.4Classification of Levelling - Simple Levelling, Differential Levelling, FlyLevelling, Profile Levelling, Cross Sectioning Reciprocal Levelling and Precise Levelling	**1**	**2**	**11/11/2024**			
	3.5 Examples & methods of finding out the R. L. in Level Book by H.I. Methods and Rise & Fall Methods with necessary check.	**1**	**1**	**13/11/2024**			
	3.6 Correction for Curvature and refraction and related examples, Balancing of backsight and foresight.	**1**	**1**	**14/11/2024**			
	3.7 Errors in Levelling ,Degree of Precision	**1**	**1**	**18/11/2024**			
4	**UNIT-4 CONTOURING**						
	4.1ContouR, Contour interval, horizontal equivalent	**1**	**2**	**21/11/2024**			
	4.2 Uses of contours Characteristics of contours	**1**					
	4.3 Methods of Contouring Interpolation of contours	**1**	**2**	**22/11/2024**			

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

Subject :SURVEYING-1
Sub Code: 2020372(020)Semester: 3th
Faculty: Ms. AKANKSHA DESHMUKH Theory Class: 2 Total Class (T+P): 6
ESE: 70 CT: 20 TA:30 Total: 120

	4.4Preparation of contour map.	**1**					
	4.5. Uses of Contour Map-Drawing of Sections, Determination of intervisibilty between two points, Tracing of contour gradient and location of route, measurement of drainage areas ,calculation of capacity of reservoirs & related examples	**1**	**2**	**25/11/2024**			
	4.6 Use of Topo sheet	**1**	**1**	**27/11/2024**			
	UNIT-5 PLANE TABLE SURVEY						
	5.1 Principles of plane table surveying, Advantages and disadvantages of plane table survey.	**1**	**2**	**28/11/2024**			
	5.2 Plane table and its accessories,	**1**					
5	5.3 Setting of a plane table: Centering Levelling Orientation	1	**1**	**29/11/2024**			

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

Subject :SURVEYING-1
Sub Code: 2020372(020)Semester: 3th
Faculty: Ms. AKANKSHA DESHMUKH Theory Class: 2 Total Class (T+P): 6
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	5.4 Methods of plane table surveying (a) Radiation, (b) Intersection (c) Traversing (d) Resection	**1**	**1**	**4/12/2024**			
	5.5 Errors in plane table survey and precautions to control them.	**1**	**1**	**5/12/2024**			
	5.6 **Minor instruments**:- Construction and use of Hand Level, Abney Level, Box Sextant, Pentagraph and Ceylon Ghat Tracer, Planimeter	**1**	**1**	**6/12/2024**			

Total Theory Periods:38 Total Tutorial Periods: 00 Total Periods:35

Faculty incharge: Ms. AKANKSHA DESHMUKH

In charge HOD:UPENDRA KUMAR PATEL

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

Subject : SURVEYING -II

Sub Code: 2020471(20) **Semester: 4th**

Faculty: Ms. AKANKSHA DESHMUKH Theory Class: 2 Total Class (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 -I THEODOLITE SURVEY**						
	1.1 Introduction to theodolite, Uses of theodolite , Sketch the parts of Transit Vernier theodolite, Reading of main and vernier scale on horizontal and vertical plate	**1**	**2**	**5/2/2025**			
	1.2 Temporary adjustment of a theodolite	**1**					
	1.3Fundamental axis of theodolite and their relationship	**1**	**2**	**6/2/2025**			
	1.4 Definitions and various technical terms	**1**					
	1.5 Methods of measuring horizontal angles and vertical angles	**1**	**2**	**12/2/2025**			
	1.6 Measuring direct and deflection angles, Errors in theodolite survey	**1**					

	1.7 Theodolite Traversing, Traverse computations, Closing errors, Balancing the traverse	**1**					
2	**UNIT -II TACHEOMETRY**						
	2.1 Introduction , Purpose and Principles of tacheometric surveying Instruments used in Tacheometry	**1**	**2**	**13/2/2025**			
	2.2 Methods of Tacheometry (Stadia &Tangential)	**1**					
	2.3 Principle of of Stadia Tacheometry & Methods of determining constants of a Tacheometer	**1**	**2**	**19/2/2025**			
	2.4 Numerical examples on tacheometer constants	**1**					
	2.5 Anallatic Lens, advantages & disadvantages.	**1**	**2**	**20/2/2025**			
	2.6 Method of Fixed Hair : - When line of sight is horizontal and staff held vertically	**1**					
	2.7 Advantages and disadvantages of Tangential method Errors in Stadia Tacheometry	**1**	**2**	**13/3/2025**			
3	**UNIT-3 CURVES**						

	3.1 Introduction Types of circular curves, Definitions and notations, Designation of curve	**1**	**2**	**17/3/2025**			
	3.2 Relation between Radius and degree of curve, Elements	**1**					
	of simple circular curve.						
	3.3 Setting out simple circular curve- Linear Method and Angular Method of location of tangent, tangent point, peg interval.	**1**	**2**	**19/3/2025**			
	3.4 Linear Methods – By ordinates from long chord, by successive bisection of arcs, by offsets from tangents, by offsets from chord produced.	**1**					
	3.5 Angular Method – Rankine's method of tangential angle	**1**	**2**	**20/3/2025**			
	3.6 Introduction to Transition curves, Vertical curves and their purpose,	**1**					
4	**UNIT-4 MODERN SURVEYING TECHNIQUES**						
	4.1 Basics of Digital Theodolite Introduction and Principles of E.D.M.	**1**	**2**	**3/4/2025**			
	4.2 Introduction and Basics of Total station - Parts of Total station - uses of Total Station, Automatic Target Recognition ATR .	**1**					

	4.3 Surveying using Total Station, Fundamental Parameters of Total Station Precautions to be taken while using Total Station	**1**	**2**	**12/4/2025**			
	4.4 Set up of Total Station Centering,	**1**					
	4.5 Field Procedure for Total Station , Initial Data Entry ,	**1**	**2**	**17/4/2025**			
	4.6 Electronic data recording- Data loggers : Data recorders, Field computers, Memory cards, Internal Memory	**1**					
5	**UNIT-5 GIS AND GPS**						
	5.1 Introduction Definition of GIS	**1**	**2**	**19/4/2025**			
	5.2 Objectives of GIS Subsystems of GIS	**1**					
	5.3 Tools of representation of features Point Data, Line Data, Areal Data. Data Structure for GIS : Vector and Raster data structure	**1**	**2**	**20/4/2025**			
	5.4 GIS SOFTWARE PACKAGES Application areas of GIS, Remote sensing and GIS, ArcGIS,.	**1**	**2**	**27/4/2025**			
	5.5 GPS Overview : Introduction and principle, Components of GPS	**1**	**2**	**2/5/2025**			

	5.6 Introduction to GPS surveying techniques: Static and Dynamic, Uses and application of GPS.	**1**	**2**	**7/5/2025**			

Total Theory Periods: 48 **Total Tutorial Periods: 00** **Total Periods: 36**

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HOD incharge : Mr. UPENDRA KUMAR PATEL