

**DEPARTMENT OF CIVIL ENGINEERING  
GOVT. POLYTECHNIC, SAMBALPUR (RENGALI)**


NAME OF THE FACULTY: Miss PINKY SAHU(PTC)

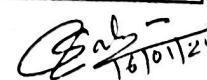
TELE(PTGF), CIVIL ENGINEERING

**LESSON PLAN OF TH.3 SURVEY 1 FOR 4TH SEM, CIVIL ENGG, SUMMER 2024 W.E.F. 16.01.2024**

WEEK NO.	TOPIC	PERIODS ASSIGNED PER TOPIC	PERIODS AVAILABLE PER WEEK
W-1	<b>1 INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS:</b> 1.1 Surveying: Definition, Aims and objectives 1.2 Principles of survey-Plane surveying- Geodetic Surveying- Instrumental surveying. 1.3 Precision and accuracy of measurements, instruments used for measurement of distance, Types of tapes and chains. 1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies.	7	3
W-2	1.5 Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections.		4
W-3	<b>2 CHAINING AND CHAIN SURVEYING :</b> 2.1 Equipment and accessories for chaining 2.2 Ranging – Purpose, signaling, direct and indirect ranging, Line ranger – features and use, error due to incorrect ranging. 2.3 Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-features and use, slope correction. 2.4 Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles. 2.5 Purpose of chain surveying, Its Principles, concept of field book, Selection of survey stations, base line, tie lines, Check lines. 2.6 Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square. 2.7 Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying	7	1 5+1 SCA
W-4	<b>3 ANGULAR MEASUREMENT AND COMPAS SURVEYING :</b> 3.1 Measurement of angles with chain, tape & compass 3.2 Compass – Types, features, parts, merits & demerits, testing & adjustment of compass 3.3 Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings – Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of application, numerical problems on conversion of bearings 3.4 Use of compasses – setting in field-centering, leveling, taking readings, concepts of Fore bearing, Back Bearing, Numerical problems on computation of interior & exterior angles from bearings. 3.5 Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination. 3.6 Errors in angle measurement with compass – sources & remedies 3.7 Principles of traversing – open & closed traverse, Methods of traversing. 3.8 Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction. 3.9 Errors in compass surveying – sources & remedies. Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table	12	4+1 SCA 5+1 SCA
W-6	<b>PRACTICAL DEMONSTRATION</b>		1
W-7	<b>4 MAP READING CADASTRAL MAPS &amp; NOMENCLATURE:</b> 4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols 4.2 Cadastral Map Preparation Methodology 4.3 Unique identification number of parcel 4.4 Positions of existing Control Points and its types 4.5 Adjacent Boundaries and Features, Topology Creation and verification	7	1+1 SCA 5
	<b>5 PLANE TABLE SURVEYING :</b> 5.1 Objectives, principles and use of plane table surveying		1 SCA

W-8	<p>5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection.</p> <p>5.4 Statements of TWO POINT and THREE POINT PROBLEM.</p> <p>Errors in plane table surveying and their corrections, precautions in plane table surveying.</p>	7	5+1 SCA
	<b>PRACTICAL DEMONSTRATION</b>		2
W-9	<p><b>6 THEODOLITE SURVEYING AND TRAVERSING:</b></p> <p>6.1 Purpose and definition of theodolite surveying</p> <p>6.2 Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier. Temporary adjustment of theodolite</p>	15	1+1 SCA
W-10	<p>6.3 Concept of transiting – Measurement of horizontal and vertical angles.</p> <p>6.4 Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations.</p> <p>6.5 Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method, Plotting the traverse by coordinate method. Checks for open and closed traverse.</p> <p>6.6 Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table, Numerical problems on omitted measurement of lengths &amp; bearings.</p>		5+1 SCA
W-11	<p>6.7 Closing error – adjustment of angular errors, adjustment of bearings, numerical problems</p> <p>6.8 Balancing of traverse – Bowditch's method, transit method, graphical method, axis method, calculation of area of closed traverse.</p>		5+1 SCA
	<b>PRACTICAL DEMONSTRATION</b>		2
W-12	<p><b>7 LEVELLING AND CONTOURING :</b></p> <p>7.1 Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M.</p> <p>7.2 Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.</p> <p>7.3 Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI.</p> <p>7.4 Field data entry – level Book – height of collimation method and Rise &amp; Fall method, comparison, Numerical problems on reduction of levels applying both methods, Arithmetic checks.</p> <p>7.5 Effects of curvature and refraction, numerical problems on application of correction.</p> <p>7.6 Reciprocal leveling – principles, methods, numerical problems, precise leveling.</p> <p>7.7 Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.</p> <p>7.8 Definitions, concepts and characteristics of contours</p> <p>7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.</p>	15	3+1 SCA
W-13	<p>7.10 Use of contour maps on civil engineering projects – drawing cross- sections from contour maps, locating proposal routes of roads / railway / canal on a contour map, computation of volume of earthwork from contour map for simple structure.</p> <p>7.11 Map Interpretation: Interpret Human and Economic Activities (i.e. Settlement, Communication, Land use etc.), Interpret Physical Features (i.e. Relief, Drainage Pattern etc.), Problem Solving and Decision Making.</p>		5+1 SCA+2 EXTRA CLASS
			3
W-14	<p><b>8 COMPUTATION OF AREA &amp; VOLUME:</b></p> <p>8.1 Determination of areas, computation of areas from plans.</p> <p>8.2 Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule.</p> <p>8.3 Calculation of volumes by prismoidal formula and trapezoidal formula. Prismoidal corrections, curvature correction for volumes</p>	5	2+1 SCA+2 EXTRA CLASS
W-15	<b>REVISION AND DISCUSS ON PREVIOUS YEAR QUESTION PAPER</b>	-	-

  
 Signature of Concerned Faculty  
 Department of Civil Engineering

  
 C/S of H.O.D.  
 Department of Civil Engineering

**GOVERNMENT POLYTECHNIC, SAMBALPUR (RENGALI)**


**DEPARTMENT OF CIVIL ENGINEERING**


NAME OF THE FACULTY: Miss PINKY SAHU (PTGF) Civil Engineering

**LESSON PLAN OF CONCRETE TECHNOLOGY (TH-4) FOR 6TH SEM SUMMER-2024 w.e.f. 16.01.2024**

WEEK NO.	TOPIC TO BE COVERED	PERIODS ASSIGNED PER TOPIC	PERIODS AVAILABLE PER WEEK
W-1	Concrete as a construction material: 1.1 Grades of concrete. 1.2 Advantages and disadvantages of concrete.	2	2
W-2	2.1 Composition, hydration of cement, water cement ratio and compressive strength, fineness of cement, setting time, soundness, types of cement.	4	4
W-3	Classification and characteristics of aggregate, fineness modulus, grading of aggregate, I.S.383 3.2 Quality of water for mixing and curing.	6	3
W-4	3.3 Important functions, classification of admixtures, I.S 9103, accelerating admixtures, retarding admixtures, water reducing admixtures, air containing admixtures		3
W-5	4.1 Concept of fresh concrete, workability, slump test, compacting factor test, V-tee consistency test and flow test, requirement of workability, I.S.1199.	6	4+2 Extra class
W-6	5.1 Cube and cylinder compressive strengths, flexural strength of concrete, stress-strain and elasticity, phenomena of creep and shrinkage, permeability, durability of concrete, sulphate, chloride and acid attack on concrete, efflorescence.	7	4
W-7			3
W-8	6.1 a) Introduction b) Data or input required for mix design.	5	3
W-9	6.2 Nominal mix concrete & design mix concrete. 6.3 Basic consideration for concrete mix design, Methods of proportioning concrete mix – I.S Code method of mix design (I.S.10262)		2
W-10	7.1 Batching of materials, mixing of concrete materials, transportation, placing of concrete, compaction of concrete (vibrators), Curing of concrete, Formwork-requirements and types, stripping of forms. (Concepts only)	6	3
W-11	8.1 Quality control of Concrete as per I.S.456. Factors causing the variations in the quality of concrete 8.2 Mixing, Transporting, Placing & curing requirements of Concrete as per I.S.456.	6	3

W-12	8.3 Inspection and Testing as per Clause 17 of IS:456. 8.4 Durability requirements of Concrete as per I.S:456.		3
W-13	9.1 Introduction to ready mix concrete, high performance concrete, silica fume concrete, shot-crete concrete or gunitting (Concepts only).	6	4+2 Extra class
W-14	10.1 Types of deterioration, prevention of concrete deterioration, corrosion of reinforcement, effects and prevention	6	4+ 1SCA+ 1Extra class
W-15	11.1 Symptom, cause and prevention and remedy of defects during construction, cracking of concrete due to different reasons. Repair of cracks for different purposes, selection of techniques, polymer based repairs, common types of repairs.	6	4+2 Extra class

  
 Signature of Concerned Faculty  
 Department of Civil Engineering

  
 C/S Signature of Senior Lect./ HOD  
 Department of Civil Engineering