LESSION PLAN OF TH.3 SURVEY 1 FOR 4TH SEM, CIVIL ENGG, SUMMER 2025

w.e.f- 04.02.2025 **Faculty name-**

Chittaranjan Sahoo

WEEK NO.	TOPIC	PERIODS ASSIGNED PER TOPIC	PERIODS AVAILABLE PER WEEK
W-1	**1 INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS:** 1.1 Surveying: Definition, Aims and objectivEes 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.	7	3
W-2	1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies. 1.5 Corrections to measured lengths due to incorrect length, temperature		4
	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.		1
W-3	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	5+1 SCA
W-4	**3 ANGULAR MEASUREMENT AND COMPAS SURVEYING :** 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,	12	4+1 SCA
W-5	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.		5+1 SCA
W-6	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.		1
	4 MAP READING CADASTRAL MAPS & NOMENCLATURE: 4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols	7	1+1 SCA
W-7	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.		5

Week	Content	Hours	SCA/Periods
	5 PLANE TABLE SURVEYING :		1 SCA
W-8	5.1 Objectives, principles and use of plane table surveying. 5.2 Instruments & accessories used in plane table surveying. 5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection. 5.4 Statements of TWO POINT and THREE POINT PROBLEM. Errors in plane table surveying and their corrections, precautions in plane table surveying.	7	5+1 SCA
	PRACTICAL DEMONSTRATION		2
W-9	6.2 Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier, Temporary adjustment of theodolite 6.3 Concept of transiting –Measurement of horizontal and vertical angles. 6.4 Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations.	15	1+1 SCA
W-10	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. 6.6 Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table, Numerical problems on omitted measurement of lengths & bearings		5+1 SCA
W-10	6.7 Closing error – adjustment of angular errors, adjustment of bearings, numerical problems 6.8 Balancing of traverse – Bowditch's method, transit method, graphical method, axis method, calculation of area of closed traverse.		5+1 SCA
	PRACTICAL DEMONSTRATION		2
W-11	**7 LEVELLING AND CONTOURING :** 7.1 Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M. 7.2 Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis. 7.3 Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI. 7.4 Field data entry – level Book – height of collimation method and Rise & Fall method, comparison, Numerical problems on reduction of levels applying both methods, Arithmetic checks. 7.5 Effects of curvature and refraction, numerical problems on application of correction. 7.6 Reciprocal leveling – principles, methods, numerical problems, precise leveling. 7.7 Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.	15	3+1 SCA
W-12	7.8 Definitions, concepts and characteristics of contours. 7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.		5+1 SCA+2 EXTRA CLASS
	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		3

W-13	8.1 Determination of areas, computation of areas from plans. 8.2 Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule. 8.3 Calculation of volumes by prismoidal formula and trapezoidal formula, Prismoidal corrections, curvature correction for volumes.	5	2+1 SCA+2 EXTRA CLASS
W-16	REVISION AND DISCUSS ON PREVIOUS YEAR QUESTION PAPER	—	—

Faculty Signature

HOD
Department of Civil Engg.