LESSON PLAN
DEPARTMENT OF CIVIL ENGINEERING, ITT, CHOUDWAR

SUBJECT: SURVEY -1   Periods: 5 per week   SEMESTER: 4TH

NAME OF FACULTY: RITUPURNA SWAIN   ACADEMIC YEAR.2020-2021

Semester From date: To Date: No. of weeks: 15

Week	Class Day	Theory / Practical Topics
1st	1st	1.INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS: Surveying: Definition, Aims and objectives, Principles of survey-Plane surveying- Geodetic Surveying- Instrumental surveying , Precision and accuracy of measurements
	2nd	Precision and accuracy of measurements, instruments used for measurement of distance, Types of tapes and chains.
	3rd	Errors and mistakes in linear measurement – classification, Sources of errors and remedies.
2nd	1st	Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections.
	2nd	2.CHAINING AND CHAIN SURVEYING: Equipment and accessories for chaining , Ranging – Purpose, signaling, direct and indirect ranging, Line ranger – features and use, error due to incorrect ranging.
	3rd	Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method , Clinometer -features and use, slope correction
3rd	1st	Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles., Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines
	2nd	Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square. , Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying.
	3rd	3.ANGULAR MEAUREMENT AND COMPASS SURVEYING: Measurement of angles with chain, tape & compass , Compass – Types, features, parts, merits & demerits, testing & adjustment of compass ,
4th	1st	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
	2nd	Numerical problems on conversion of bearings, Numerical problems on conversion of bearings
	3rd	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.
5th	1st	Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination., Errors in angle measurement with compass – sources &

		remedies.
	2nd	Principles of traversing – open & closed traverse, Methods of traversing. , Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction.
	3rd	Numerical problems of application of correction due to local attraction.
6th	1st	Errors in compass surveying – sources & remedies. Plotting of traverse – check of closing error in closed & open traverse ,Bowditch's correction, Gales table 4. MAP READING CADASTRAL MAPS N& NOMENCLATURE: Study of direction, Scale, Grid Reference and Grid Square
	2nd	Study of Signs and Symbols , Cadastral Map Preparation Methodology
	3rd	Unique identification number of parcel, Positions of existing Control Points
7th	1st	Positions of existing Control Points and its types , Adjacent Boundaries and Features,
	2nd	Topology Creation and verification 5. PLANE TABLE SURVEYING: Objectives, principles and use of plane table surveying
	3rd	Instruments & accessories used in plane table surveying.
8th	1st	Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection
	2nd	Statements of TWO POINT and THREE POINT PROBLEM. Errors in plane table surveying and their corrections,
	3rd	Precautions in plane table surveying.
9th	1st	6.THEODOLITE SURVEYING AND TRAVERSING: Purpose and definition of theodolite surveying , Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier,
	2nd	Temporary adjustment of theodolite , Concept of transiting – Measurement of horizontal and vertical angles
	3rd	Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite,
10th	1st	Errors in Theodolite observations. , Methods of theodolite traversing with – inclined angle method, deflection angle method,
	2nd	Bearing method, Plotting the traverse by coordinate method, Checks for open and closed traverse.
	3rd	Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table

11th	1st	Numerical problems on omitted measurement of lengths & bearings
	2nd	Closing error – adjustment of angular errors, adjustment of bearings, numerical problems , Balancing of traverse – Bowditch's method, transit method,
	3rd	Graphical method, axis method, calculation of area of closed traverse.
12th	1st	7.LEVELLING AND CONTOURING: Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M. , Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.
	2nd	Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI. , Field data entry – level Book – height of collimation method and Rise & Fall method, comparison
	3rd	Numerical problems on reduction of levels applying both methods, Arithmetic checks.
13th	1st	Effects of curvature and refraction, numerical problems on application of correction.
	2nd	Numerical problems on application of correction, Reciprocal leveling – principles, methods, numerical problems, precise leveling.
	3rd	Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels
14th	1st	Definitions, concepts and characteristics of contours., Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.
	2nd	Use of contour maps on civil engineering projects – drawing crosssections 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.
	3rd	Map Interpretation: Interpret Human and Economic Activities (i.e.: Settlement, Communication, Land use etc.), Interpret Physical landform (i.e.: Relief, Drainage Pattern etc.), Problem Solving and Decision Making
15th	1st	8.COMPUTATION OF AREA & VOLUME: Determination of areas, computation of areas from plans , Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule.
	2nd	Calculation of volumes by prismoidal formula and trapezoidal formula
	3rd	Prismoidal corrections, curvature correction for volumes.