LESSON PLAN FOR SURVEY

Discipline Civil	Semester: 4th	Name of teaching faculty: RICHA SETH
Subject: SURVEYING-1	Nos of days per week class allotted: 5	Semester from date:9.12.19 to date:31.03.20
Week	Class day	Theory topics
1ST	1ST	Definition, Aims and objectives Principles of survey Plane surveying Geodetic Surveying Instrumental surveying
	2ND	Precision and accuracy of measurements, instruments used for ,measurement of distance, Types of tapes and chains
	3RD	Errorrs 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	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.
	2ND	Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines
	3RD	Offsets Necessity, Perpendicular and Oblique offsets, Instruments for setting offse Cross Staff, Optical Square
4TH	1ST	Errors in chain surveying compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying.
	2ND	Measurement of angles with chain, tape & compass Compass Types, features, parts, merits & demerits, testing & adjustment of compass
	3RD	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

5TH	1ST	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.
	2ND،	Effects of earth's magnetism dip of needle, magnetic declination, variation in dec lination, numerical problems on application of correction for declination. Errors in angle measurement with compass sources & remedies
	3RD	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
6TH	1ST	Errors in compass surveying sources & remedies. Plotting of traverse check of closing error in closed & open traverse, Bowditch's correction, Gales table
	2ND	Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols
	3RD	Cadastral Map Preparation Methodology Unique identification number of parcel Positions of existing Control Points and its types
7TH	1ST	Adjacent Boundaries and Features, Topology Creation and verification
	2ND	Objectives, principles and use of plane table surveying. Instruments & accessories used in plane table surveying.
	3RD	Methods of plane table surveying Radiation, Intersection, Traversing, Resection.
8TH	1ST	Statements of TWO POINT and THREE POINT PROBLEM. Errors in plane table surveying and their corrections, precautions in plane table surveying
	2ND	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, Temporary adjustment of theodolite
	3RD	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

9TH	1ST	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.
	2ND	Traverse computation consecutive coordinates, latitude and departure, Gale's traverse table, Numeric al problems on omitted measurement of lengths & bearings
	3RD	Closing error ,adjustment of angular errors, adjustment of bearings, numerical problems
10TH	1ST	Balancing of traverse Bowditch's method, transit method, graphical method, axis method, calculation of area of closed traverse.
	2ND	Definition and Purpose and types of leveling concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M.
	3RD	Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.
11TH	1ST	Levelling staff Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI
	2ND	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.
	3RD	Effects of curvature and refraction, numerical problems on application of correction.
12TH	1ST	Reciprocal leveling principles, methods, numerical problems, precise leveling.
	2ND	Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
	3RD	Definitons, concepts and characteristics of contours
13TH	1ST	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,
	3RD	locating proposal routes of roads / railway / canal on a contour map, computation of volume of earthwork from contour map for simple structure

14TH	1ST	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
	2ND	Determination of areas, computation of areas from plans.
	3RD	Calculation of area by using ordinate rule, trapezoidal rule,
15TH	1ST	Simpson's rule
	2ND	Calculation of volumes by prismoidal formula and trapezoidal formula,
	3RD	Prismoidal corrections, curvature correction for volumes.