LESSON PLAN FOR SUMMER 2023

DISCIPLINE:- CIVIL ENGG.	SEMESTER:-4TH SEM SEC A	NAME OF THE TEACHING FACULTY:-KALYANI MOHANTY
SUBJECT:-LAND SURVEY-I ,TH.3	NO. OF DAYS/PER WEEK CLASS ALLOTED:-5T	SEMESTER - 4TH Sem SEC A FROM DATE-13/02/2023 TO DATE- 23/05/2023 NO. OF WEEKS-15WEEKS
WEEK	CLASS DAY	THEORY TOPICS
1ST WEEK		CHAPTER-1 INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS:(7P)
	1st	1.1 Surveying: Definition, Aims and objectives
	2nd	1.2 Principles of survey-Plane surveying- Geodetic Surveying-Instrumental surveying.
	3rd	1.3 Precision and accuracy of measurements Instruments used for measurement of distance
	4th	1.3 Types of tapes and chains
	5th	1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies.
2ND WEEK	1st	1.5 Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag
	2nd	Numerical problem applying corrections.
		CHAPTER-2 CHAINING AND CHAIN SURVEYING :(7P)
	3rd	2.1 Equipment and accessories for chaining
	4th	2.2 Ranging – Purpose, signaling, direct and indirect ranging, Line ranger – features and use, error due to incorrect ranging
	5th	2.3 Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-features and use, slope correction.
3RD WEEK	1st	2.4 Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles.
	2nd	2.5 Purpose of chain surveying, Its Principles, concept of field book.Selection of survey stations, base line, tie lines, Check lines.
	3rd	2.7 Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.
	4th	2.8 Errors in chain surveying – compensating and accumulative errors causes &remedies, Precautions to be taken during chain surveying
		CHAPTER-3 ANGULAR MEASUREMENT AND COMPAS SURVEYING :(12P)
	5th	3.1 Measurement of angles with chain, tape & compass
4TH WEEK	1st	3.2 Compass – Types, features, parts, merits & demerits, testing & adjustment of compass
	3rd	3.3 Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings – Whole circle bearing,
	4th	Quadrantal bearing, Reduced bearing, suitability of application, numerical problems on conversion of bearings.Numerical problems on conversion of bearings
4TH WEEK	5th	3.4 Use of compasses – setting in field-centering, leveling, taking readings, concepts of Fore bearing, Back Bearing,

5TH WEEK	1st	Numerical problems on computationof interior & exterior angles from bearings.
	2nd	3.5 Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination.
	3rd	Numerical problems on application of correction for declination.
	4th	3.6 Errors in angle measurement with compass – sources & remedies.
	5th	3.7 Principles of traversing – open & closed traverse, Methods of traversing.
6TH WEEK	1st	3.8 Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction.
	2nd	3.9 Errors in compass surveying – sources & remedies. Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction,Gales table
		CHAPTER-4 MAP READINGS CADASTRAL MAPS &NOMENCLATURE(7P)
	3rd	4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols
	4th	4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols
	5th	4.2 Cadastral Map Preparation Methodology
7TH WEEK	1st	4.3 Unique identification number of parcel
	2nd	4.4 Positions of existing Control Points and its types
	4th	4.5 Adjacent Boundaries and Features Topology Creation and verification.
8TH WEEK	1st	4.5 Adjacent Boundaries and Features Topology Creation and verification.
		CHAPTER-5 PLANE TABLE SURVEYING(7P)
	2nd	5.1 Objectives, principles and use of plane table surveying.
	3rd	5.2 Instruments & accessories used in plane table surveying
	4th	5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing (4) Resection
9TH WEEK	1st	5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing (4) Resection
	2nd	5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing (4) Resection
	3rd	5.4 Statements of TWO POINT and THREE POINT PROBLEM. Errors in plane table surveying and their corrections, precautions in plane table surveying.
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		CHAPTER-6 THEODOLITE SURVEYING AND TRAVERSING(15P)
10TH WEEK	1st	6.1 Purpose and definition of theodolite surveying,
	2nd	6.2 Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier, Temporary adjustment of theodolite.
	3rd	6.3 Concept of transiting –Measurement of horizontal and vertical angles.

10TH WEEK	4th	6.4 Measurement of magnetic bearings, deflection angle, direct angleSetting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations.
	5th	6.4 Measurement of magnetic bearings, deflection angle, direct angleSetting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations.
11TH WEEK	1st	6.5 Methods of theodolite traversing with – inclined angle method,deflection angle method, bearing method Plotting the traverse by coordinate method,angle method, bearing method, Checks for open and closed traverse.
	2nd	6.5 Methods of theodolite traversing with – inclined angle method,deflection angle method, bearing method Plotting the traverse by coordinate method,angle method, bearing method, Checks for open and closed traverse.
	3rd	6.6 Traverse computation – consecutive coordinates Latitude and departure,Gale's traverse table. Numerical problems on omitted measurement of lengths &bearings
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	5th	6.6 Traverse computation – consecutive coordinates Latitude and departure,Gale's traverse table. Numerical problems on omitted measurement of lengths &bearings
12TH WEEK	1st	6.7 Closing error – adjustment of angular errors, adjustment of bearings numerical problems
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	3rd	6.8 Balancing of traverse – Bowditch's method, transit methodGraphical method, axis method. Calculation of area of closed traverse.
	5th	6.8 Balancing of traverse – Bowditch's method, transit methodGraphical method, axis method. Calculation of area of closed traverse.
13TH WEEK	1st	6.8 Balancing of traverse – Bowditch's method, transit methodGraphical method, axis method. Calculation of area of closed traverse.
		CHAPTER-7 LEVELLING AND CONTOURING(15P)
	2nd	7.1 Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M.
	3rd	7.2 Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.
	4th	7.3 Levelling staff – Temporary adjustments of level, taking reading with level,concept of bench mark, BS, IS, FS, CP, HI.
	5th	7.4 Field data entry – level Book – height of collimation method
14TH WEEK	1st	7.4 Rise & Fall method, comparison, Numerical problems on reduction of levels applying both methods, Arithmetic checks.
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	3rd	7.5 Effects of curvature and refraction, numerical problems on application of correction.
	5th	7.6 Reciprocal leveling – principles, methods
15TH WEEK	1st	7.6 Numerical problems, precise leveling.
	2nd	7.7 Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
EXTRA CLASSES REQUIRED		7.8 Definitions, concepts and characteristics of contours.
		7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.
		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.
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		7.11 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
		CHAPTER-8 COMPUTATION OF AREA & VOLUME:(5P)
		8.1 Determination of areas, computation of areas from plans.
		8.2 Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule.
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		8.3 Calculation of volumes by prismoidal formula and trapezoidal formula,Prismoidal corrections, curvature correction for volumes.
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Kalyani Mohanty

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