

KIIT POLYTECHNIC, BHUBANESWAR

LESSON PLAN

Session (2023-2024)

Discipline Civil Engg.	Semester: 4 th sem. Summer/2024	Name of the Teaching Faculty: Suchismita Padhi Email ID: Suchismita.padhifce@kp.kiit.ac.in
Subject: Land survey- I (Th.3)	No. of Days/week: 05	Start Date:16/01/24 End Date:26/04/24
Week	Class day	Theory topics
1st	1 ST	Surveying: Definition Aims and objectives
	2 ND	Principles of survey-Plane surveying- GeodeticSurveying- Instrumental surveying.
	3 RD	Precision and accuracy of measurements, instrumentsused for measurement of distance,
	4 th	Types of tapes and chains.
	5 th	Errors and mistakes in linear measurement –classification, Sources of errors and remedies.
2nd	1 ST	Corrections to measured lengths due to-incorrect length,temperature variation, pull, sag,
	2 ND	numerical problem applying corrections
	3 RD	CHAINING AND CHAIN SURVEYING : Equipment and accessories for chaining
	4 TH	Ranging – Purpose, signaling, direct and indirect ranging,Line ranger – features and use, error due to incorrect ranging.
	5 TH	Methods of chaining –Chaining on flat ground, Chainingon sloping ground – stepping method, Clinometer-features and use, slope correction
3rd	1 ST	Setting perpendicular with chain & tape,

	2 ND	Chaining across different types of obstacles –
	3 rd	Numerical problems on chaining across obstacles
	4 th	Purpose of chain surveying, Its Principles, concept of fieldbook
	5 th	Selection of survey stations, base line, tie lines, Check Lines
4 th	1 ST	Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.
	2 ND	Errors in chain surveying – compensating and accumulative errors causes &

		remedies, Precautions to be taken during chain surveying.
	3 RD	ANGULAR MEASUREMENT AND COMPASS SURVEYING : Measurement of angles with chain,
	4 TH	Measurement of angles tape & compass
	5 TH	Compass – Types, features, parts, merits & demerits, testing & adjustment of compass
5 th	1 ST	Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings
	2 ND	Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of application
	3 RD	Quiz Test
	4 TH	Use of compasses – setting in field-centering, leveling, taking readings, concepts of Fore bearing, Back Bearing
	5 TH	Numerical problems on computation of interior & exterior angles from bearings.
6 th	1 ST	Effects of earth's magnetism – dip of needle
	2 ND	magnetic declination, variation in declination, numerical problems on application of correction for declination.
	3 RD	Errors in angle measurement with compass – sources & remedies.
	4 TH	Principles of traversing – open & closed traverse

	5 TH	Local attraction – causes, detection, errors, corrections
7th	1 ST	Numerical problems of application of correction due to local attraction.
	2 ND	Errors in compass surveying – sources & remedies
	3 RD	Plotting of traverse – check of closing error in closed & open traverse,
	4 th	Bowditch's correction, Gales table
	5 th	MAP READING CADASTRAL MAPS & NOMENCLATURE: Study of direction, Scale,
8 th	1 ST	Grid Reference and Grid Square Study of Signs and Symbols
	2 ND	Cadastral Map Preparation Methodology

	3 RD	Positions of existing Control Points and its types
	4 TH	Adjacent Boundaries and Features, Topology Creation and verification
	5 TH	PLANE TABLE SURVEYING : Objectives, principles and use of plane table surveying
9th	1 ST	Instruments & accessories used in plane table surveying.
	2 ND	Methods of plane table surveying
	3 RD	Statements of TWO POINT and THREE POINT PROBLEM.
	4 TH	Errors in plane table surveying and their corrections, precautions in Plane table surveying
	5 th	Quiz test
10th	1 ST	THEODOLITE SURVEYING AND TRAVERSING: Purpose and definition of theodolite surveying
	2 ND	Transit theodolite- Description of features, component parts
	3 RD	Concept of transiting – Measurement horizontal and vertical angles

	4 th	Measurement of magnetic bearings, deflection angle, direct angle
	5 th	Quiz Test
11 th	1 ST	Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method,
	2 ND	Checks for open and closed traverse.
	3 RD	Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table, Numerical problems on omitted measurement of lengths & Bearings
	4 TH	Closing error – adjustment of angular errors, adjustment of bearings, numerical problems
	5 TH	Balancing of traverse – Bowditch's method
12 th	1 ST	transit method, graphical method, axis method, calculation of area of closed traverse
	2 ND	LEVELLING AND CONTOURING : Definition and Purpose and types of leveling – concepts of level surface,
	3 RD	Horizontal surface, vertical surface, datum, R. L., B.M
	4 TH	Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.
	5 TH	Levelling staff – Temporary adjustments of level, taking

		reading with level, concept of bench mark, BS, IS, FS, CP, HI
13 th	1 ST	height of collimation method and Rise and fall method, comparison, Numerical problems on reduction of levels applying both methods, Arithmetic checks.
	2 ND	Effects of curvature and refraction numerical problems on application of correction.
	3 RD	Reciprocal levelling
	4 th	Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
	5 th	Quiz test
14 th	1 ST	Definitions, concepts and characteristics of contours
	2 ND	Methods of contouring, plotting contour maps, Interpretation of contour maps,

	3 RD	Use of contour maps on civil engineering projects
	4 TH	Map Interpretation: Interpret Human and Economic Activities (i.e.: Settlement, Communication, Land use etc
	5 TH	Interpret Physical landform (i.e.: Relief, Drainage Pattern etc.), Problem Solving and Decision Making
15th	1 ST	COMPUTATION OF AREA & VOLUME: Determination of areas, computation of areas from plans.
	2 ND	Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule.
	3 RD	Calculation of volumes by prismoidal formula and trapezoidal formula
	4 TH	Revision
	5 TH	Revision