



NILASAILA INSTITUTE OF SCIENCE & TECHNOLOGY
SERGARH-756060, BALASORE (ODISHA)
(Approved by AICTE& affiliated to SCTE&VT, Odisha)



LESSON PLAN

SUBJECT: LAND SURVEY-I(TH-3)

Name Of The Faculty :- Er.LOTAK KUMAR MOHAPATRA

Branch :- Civil Engineering

Session :- 2024-25

Semester :- 4th

Examination :- 2025 (S)

CHAPTER WISE DISTRIBUTION OF PERIODS

Sl.No.	Name of the chapter as per the Syllabus	No. of Periods as per the Syllabus	No. of periods actually needed
1	Introduction To Surveying, Linear Measurements	8	9
2	Chaining and Chain Surveying	12	14
3	Angular Measurement and Compas Surveying	12	14
4	Map Reading Cadastral Maps & Nomenclature	12	14
5	Plane Table Surveying	8	10
6	Theodolite Surveying and Traversing	8	10
	Total Period	60	72

Lotak
01/02/2025
Sign of Faculty

WSP
01/02-2025
Sign of H.O.D.



Discipline: CIVIL ENGINEERING	Semester: 4th	Name of the Teaching Faculty: Er. LOTAK KUMAR MOHAPATRA	
		SESSION : 2024-25	EXAMINATION : 2025 (S)
Week	Class Day	Topics to be Covered	
1 st	1 st	1.1 Surveying: Definition, Aims and objectives	
	2 nd	1.2 Principles of survey-Plane surveying- Geodetic Surveying- Instrumental surveying.	
	3 rd	1.3 Precision and accuracy of measurements, instruments used for measurement of distance, Types of tapes and chains	
	4 th	1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies.	
2 nd	1 st	1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies.	
	2 nd	1.5 Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections.	
	3 rd	1.5 Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections.	
	4 th	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.	
3 rd	1 st	2.3 Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-features and use, slope correction	
	2 nd	2.4 Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles.	
	3 rd	2.5 Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines.	
	4 th	2.5 Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines.	
4 th	1 st	2.7 Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square	
	2 nd	2.8 Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying.	
	3 rd	3.1 Measurement of angles with chain, tape & compass	
	4 th	3.2 Compass – Types, features, parts, merits & demerits, testing & adjustment of compass	
5 th	1 st	3.3 Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings – Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of	
	2 nd	3.3 Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings – Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of	
	3 rd	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.	
	4 th	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.	
6 th	1 st	3.5 Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination.	
	2 nd	3.6 Errors in angle measurement with compass – sources & remedies.	

6 th	3 rd	3.7 Principles of traversing – open & closed traverse, Methods of traversing.
	4 th	3.8 Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction.
7 th	1 st	3.9 Errors in compass surveying – sources & remedies. Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table
	2 nd	4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols
	3 rd	4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols
	4 th	4.2 Cadastral Map Preparation Methodology
8 th	1 st	4.3 Unique identification number of parcel
	2 nd	4.4 Positions of existing Control Points and its types
	3 rd	4.5 Adjacent Boundaries and Features, Topology Creation and verification.
	4 th	4.5 Adjacent Boundaries and Features, Topology Creation and verification.
9 th	1 st	5.1 Objectives, principles and use of plane table surveying.
	2 nd	5.2 Instruments & accessories used in plane table surveying.
	3 rd	5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection
	4 th	5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection
10 th	1 st	5.4 Statements of TWO POINT and THREE POINT PROBLEM. Errors in plane table surveying and their corrections, precautions in plane table surveying.
	2 nd	5.4 Statements of TWO POINT and THREE POINT PROBLEM. Errors in plane table surveying and their corrections, precautions in plane table surveying.
	3 rd	5.4 Statements of TWO POINT and THREE POINT PROBLEM. Errors in plane table surveying and their corrections, precautions in plane table surveying.
	4 th	6.1 Purpose and definition of theodolite surveying
11 th	1 st	6.2 Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier, Temporary adjustment of
	2 nd	6.2 Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier, Temporary adjustment of theodolite
	3 rd	6.3 Concept of transiting –Measurement of horizontal and vertical angles
	4 th	6.4 Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations.
12 th	1 st	6.4 Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite, Errors in Theodolite
	2 nd	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
	3 rd	6.5 Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method, Plotting the traverse by coordinate method, Checks for open
	4 th	6.6 Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table, Numerical problems on omitted measurement of lengths & bearings
13 th	1 st	6.6 Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table, Numerical problems on omitted measurement of lengths &

13 th	2 nd	6.7 Closing error – adjustment of angular errors, adjustment of bearings, numerical problems
	3 rd	6.7 Closing error – adjustment of angular errors, adjustment of bearings, numerical problems
	4 th	6.8 Balancing of traverse – Bowditch's method, transit method, graphical method, axis method, calculation of area of closed traverse.
14 th	1 st	6.8 Balancing of traverse – Bowditch's method, transit method, graphical method, axis method, calculation of area of closed traverse.
	2 nd	7.1 Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M.
	3 rd	7.2 Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.
	4 th	7.3 Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI.
15 th	1 st	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
	2 nd	7.5 Effects of curvature and refraction, numerical problems on application of correction.
	3 rd	7.6 Reciprocal leveling – principles, methods, numerical problems, precise leveling.
	4 th	7.7 Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
16 th	1 st	7.7 Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
	2 nd	7.8 Definitions, concepts and characteristics of contours
	3 rd	7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.
	4 th	7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.
17 th	1 st	7.10 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
	2 nd	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
	3 rd	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
	4 th	8.1 Determination of areas, computation of areas from plans.
18 th	1 st	8.2 Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule
	2 nd	8.2 Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule
	3 rd	8.3 Calculation of volumes by prismoidal formula and trapezoidal formula, Prismoidal corrections, curvature correction for volumes.
	4 th	Revision

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