SYNERGY SCHOOL OF ENGINEERING, DHENKANAL
LESSON PLAN
Session (2024-2025)

Discipline : Civil Engineering	**Semester:** 4th	**Name of the Faculty:** Manmohan Murmu **Email:** manmohan19murmu@gmail.com
Subject: Land Survey1	**No. of Days/week: 05**	**Start Date:** **End Date:**

Week	Class day	Theory topics
1st	1st	Surveying: Definition Aims and objectives
	2nd	Principles of survey-Plane surveying- Geodetic Surveying- Instrumental surveying.
	3rd	Precision and accuracy of measurements, instruments used for measurement of distance,
	4th	Types of tapes and chains.
	5th	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,
	2nd	numerical problem applying corrections
	3rd	CHAINING AND CHAIN SURVEYING :Equipment and accessories for chaining
	4th	Ranging – Purpose, signaling, direct and indirectranging, Line ranger features and use, error due to incorrect ranging.
	5th	Methods of chaining –Chaining onflat ground, Chainingon sloping ground – stepping method, Clinometer-features and use, slope correction
3rd	1ST	Setting perpendicular with chain & tape,
	2ND	Chaining across different types of obstacles –
	3rd	Numerical problems on chaining across obstacles
	4th	Purpose of chain surveying, Its Principles, concept of fieldbook
	5th	Selection of survey stations, base line, tie lines, Check Lines
4th	1ST	Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.
	2ND	Errors in chain surveying – compensating And accumulative errors causes & remedies, Precautions to be taken during chain surveying.
	3rd	ANGULAR MEASUREMENT AND COMPASSURVEYING : Measurement of angles with chain,
	4th	Measurement of angles tape & compass
	5th	Compass – Types, features, parts, merits & demerits,testing & adjustment of compass

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5th	1st	Designation of angles- concept of meridians – Magnetic,True, arbitrary; Concept of bearings
	2nd	Whole circle bearing, Quadrantal bearing, Reducedbearing, suitability of application
	3rd	Problem Solving
	4th	Use of compasses – setting in field-centering, leveling,taking readings, concepts of Fore bearing, Back Bearing
	5th	Numerical problems on computation of interior & exterior angles from bearings.
6th	1st	Effects of earth's magnetism – dip of needle
	2nd	magnetic declination, variation in declination, numerical problems on application of correction for declination.
	3rd	Errors in angle measurement with compass – sources & remedies.
	4th	Principles of traversing – open & closed traverse
	5th	Local attraction – causes, detection, errors, corrections
7th	1st	Numerical problems of application of correction due to local attraction.
	2nd	Errors in compass surveying – sources & remedies
	3rd	Plotting of traverse – check of closing error in closed &open traverse,
	4th	Bowditch's correction, Gales table
	5th	MAP READING CADASTRAL MAPS &NOMENCLATURE: Study of direction, Scale,
8th	1st	Grid Reference and Grid Square Study of Signs and Symbols
	2nd	Cadastral Map Preparation Methodology
	3rd	Positions of existing Control Points and its types
	4th	Adjacent Boundaries and Features, Topology Creation and verification
	5th	PLANE TABLE SURVEYING : Objectives, principles and use of plane table surveying
9th	1st	Instruments & accessories used in plane table surveying.
	2nd	Methods of plane table surveying
	3rd	Statements of TWO POINT and THREE POINTPROBLEM.
	4th	Errors in plane table surveying and their corrections,precautions in Plane table surveying
	5th	Problem Solving
10th	1st	THEODOLITE SURVEYING AND TRAVERSING: Purpose and definition of theodolite surveying
	2nd	Transit theodolite- Description of features, component parts
	3rd	Concept of transiting –Measurement horizontal and vertical angles
	4th	Measurement of magnetic bearings, deflection angle,direct angle
	5th	Problem Solving

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11th	1st	Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method,
	2nd	Checks for open and closed traverse.
	3rd	Traverse computation – consecutive coordinates, latitudeand departure, Gale's traverse table, Numerical problems on omitted measurement of lengths & Bearings
	4th	Closing error – adjustment of angular errors,adjustmentof bearings, numerical problems
	5th	Balancing of traverse – Bowditch's method
12th	1st	transit method, graphical method, axis method,calculation of area of closed traverse
	2nd	LEVELLING AND CONTOURING : Definition and Purpose and types of leveling–concepts of level surface,
	3rd	Horizontal surface, vertical surface, datum, R. L., B.M
	4th	Instruments used for leveling, concepts of line ofcollimation, axis of bubble tube, axis of telescope, Vertical axis.
	5th	Levelling staff – Temporary adjustments of level, taking
13th	1st	reading with level, concept of bench mark, BS, IS, FS, CP, HI
	2nd	height of collimation method and Rise and 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
	4th	Reciprocal levelling
	5th	Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
14th	1st	Definitions, concepts and characteristics of contours
	2nd	Methods of contouring, plotting contour maps,Interpretation of contour maps;
	3rd	Use of contour maps on civil engineering projects
	4th	Map Interpretation: Interpret Human and Economic Activities (i.e.: Settlement, Communication, Land use etc)
	5th	Interpret Physical landform (i.e.:Relief, Drainage Pattern etc.), Problem Solving and Decision Making
15th	1st	COMPUTATION OF AREA & VOLUME: Determination of areas, computation of areas fromplans.
	2nd	Calculation of area by using ordinate rule, trapezoidalrule, Simpson's rule.
	3rd	Calculation of volumes by prismoidal formula and trapezoidal formula
	4th	Revision
	5th	Revision

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