

LESSON PLAN OF 4th SEMESTER (2019-22) CIVIL ENGINEERING

Discipline :- CIVIL ENGG	Semester:- 4th	Name of the Teaching Faculty:- NISHANT BHANJADEO
Subject:- THEORY SURVEY 1 (TH-3)	No of Days per Week Class Allotted :- 5	Semester From:- 19th April 2021 To:- 13th August 2021 No of Weeks:- 17
Week	Class Day	Theory
1st	1st	1.0 INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS: 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, Types of tapes and chains. ,
	4th	1.3 Precision and accuracy of measurements, instruments used for measurement of distance, Types of tapes and chains. ,
	5th	1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies
2nd	1st	1.5 Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections
	2nd	2.0 CHAINING AND CHAIN SURVEYING: 2.1 Equipment and accessories for chaining
	3rd	2.2 Ranging – Purpose, signalling, direct and indirect ranging, Line ranger – features and use, error due to incorrect ranging
	4th	2.2 Ranging – Purpose, signalling, 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	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	2.6 Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.
	4th	2.7 Cross Staff, Optical Square
	5th	2.8 Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying.
4th	1st	3.0 ANGULAR MEASUREMENT AND COMPAS SURVEYING : 3.1 Measurement of angles with chain, tape & compass
	2nd	3.2 Compass – Types, features, parts, merits & demerits, testing & adjustment of compass
	3rd	3.3 Designation of angles- concept of meridians – Magnetic, True, arbitrary;
	4th	Concept of bearings – Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of application, numerical problems on conversion of bearings
	5th	Numerical on Bearing
5th	1st	3.4 Use of compasses – setting in field-centering, levelling, taking readings, concepts of Fore bearing, Back Bearing, Numerical problems on computation of interior & exterior angles from bearings
	2nd	3.5 Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination.
	3rd	3.6 Errors in angle measurement with compass – sources & remedies
	4th	3.7 Principles of traversing – open & closed traverse, Methods of traversing.
	5th	Methods of Traversing

6 th	1 st	3.8 Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction
	2 nd	3.9 Errors in compass surveying – sources & remedies. Plotting of traverse – check of closing error in closed & open traverse
	3 rd	Bowditch's correction, Gales table
	4 th	Numerical on Bowditch's correction
	5 th	Revision and numerical
7 th	1 st	4.0 MAP READING CADASTRAL MAPS & NOMENCLATURE: 4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols 4.2 Cadastral Map Preparation Methodology
	2 nd	4.3 Unique identification number of parcel 4.4 Positions of existing Control Points and its types
	3 rd	4.5 Adjacent Boundaries and Features, Topology Creation and verification.
	4 th	5.0 PLANE TABLE SURVEYING : 5.1 Objectives, principles and use of plane table surveying
	5 th	5.2 Instruments & accessories used in plane table surveying
8 th	1 st	5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection.
	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	5.5 Photogrammetry Process: 5.6 Acquisition of Imagery using aerial and satellite platform
	4 th	6.0 THEODOLITE SURVEYING AND TRAVERSING: 6.1 Purpose and definition of theodolite surveying
	5 th	6.2 Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite, concept of vernier, reading a vernier
9 th	1 st	Temporary adjustment of theodolite .
	2 nd	6.3 Concept of transiting –Measurement of horizontal and vertical angles.
	3 rd	6.4 Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations
	4 th	6.5 Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method,
	5 th	Plotting the traverse by coordinate method, Checks for open and closed traverse.
10 th	1 st	6.6 Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table,
	2 nd	Numerical problems on omitted measurement of lengths & bearings.
	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
	5 th	calculation of area of closed traverse
11 th	1 st	7.0 LEVELLING AND CONTOURING: 7.1 Definition and Purpose and types of levelling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M
	2 nd	7.2 Instruments used for levelling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis
	3 rd	7.3 Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI.
	4 th	7.4 Field data entry – level Book – height of collimation method and Rise & Fall method, comparison.
	5 th	Numerical problems on reduction of levels applying both methods, Arithmetic checks

12 th	1 st	7.5 Effects of curvature and refraction, numerical problems on application of correction.
	2 nd	7.6 Reciprocal levelling – principles, methods, numerical problems, precise levelling.
	3 rd	7.7 Errors in levelling and precautions, Permanent and temporary adjustments of different types of levels.
	4 th	7.8 Definitions, concepts and characteristics of contours
	5 th	7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.
13 th	1 st	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
	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.),
	3 rd	Problem Solving and Decision Making
	4 th	8.0 COMPUTATION OF AREA & VOLUME:
	5 th	8.1 Determination of areas, computation of areas from plans
14 th	1 st	8.2 Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule
	2 nd	8.3 Calculation of volumes by prismoidal formula and trapezoidal formula,
	3 rd	Prismoidal corrections, curvature correction for volumes
	4 th	Numerical on corrections
	5 th	Numerical on Rise and fall method
15 th	1 st	Numerical on Bowditch's correction
	2 nd	Numerical on Bearing
	3 rd	Doubt clearing class
	4 th	Doubt clearing class
16 th	1 st	Revision Class
	2 nd	
	3 rd	
	4 th	
	5 th	
17 th	1 st	Revision class
	2 nd	
	3 rd	
	4 th	
	5 th	

Signature of the concerned Lecturer

Signature of the H.O.D

Signature of Academic Coordinator

Signature of the Principal

G.p, Puri