



UTKAL INSTITUTE OF ENGINEERING & TECHNOLOGY

DISCIPLINE: CIVIL	SEMESTER: 4TH Sem	NAME OF THE TEACHING FACULTY: Er.TEJASWINI DAS		
SUBJECT: Th3. SURVEY – I	No of Days/Per week class allotted: 5 Class P/W(75)	Semester From Date:16/01/2024 To Date:26/04/2024 No. Of Weeks: 15		
WEEK	CLASS DAY	THEORY TOPICS	REMARKS	
1 st	1 st	INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS: 1.1 Surveying: Definition, Aims and objectives	Date	Dean/Principal
	2 nd	Principles of survey-Plane surveying		
	3 rd	Geodetic Surveying- Instrumental surveying		
	4 th	Precision and accuracy of measurements, instruments used for measurement of distance,		
	5 th	Types of tapes and chains. Errors and mistakes in linear measurement		
2 nd	1 st	Classification, Sources of errors and remedies.		
	2 nd	Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections.		
	3 rd	SURVEYING : Equipment and accessories for chaining		
	5 th	Ranging – Purpose, signaling, direct and indirect ranging, Line ranger – features and use, error due to incorrect		

3 rd	1 st	–Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-		
	2 nd	chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles		
	3 rd	Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, baseline, tie		
	4 th	Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.		
	5 th	Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying.		
4 th	1 st	ANGULAR MEASUREMENT AND COMPAS SURVEYING : Measurement of angles with chain, tape & compass		
	2 nd	Compass – Types, features, parts, merits & demerits, testing & adjustment of compass		
	3 rd	Designation of angles- concept of meridians – Magnetic, True, arbitrar		
	4 th	Concept of bearings – Whole circle bearing, Quadrantal bearing,		
	5 th	Reduced bearing, suitability of application, numerical problems on conversion of bearings		
	1 st	Use of compasses – setting in field-centering, leveling, taking readings		

5 th	2 nd	concepts of Fore bearing, Back Bearing, Numerical problems on computation of interior & exterior angles from bearings.		
	3 rd	Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination.		
	4 th	Errors in angle measurement with compass – sources & remedies		
	5 th	7 Principles of traversing – open & closed traverse, Methods of traversing.		
6 th	1 st	Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction.		
	2 nd	Errors in compass surveying – sources & remedies. Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table		
	3 rd	MAP READING CADASTRAL MAPS & NOMENCLATURE: Study of direction, Scale, Grid Reference and Grid Square Sstudy.		
	4 th	Grid Reference and Grid Square Study of Signs and Symbols		
	5 th	Cadastral Map Preparation Methodology		
	1 st	Unique identification number of parcel		

7 th	2 nd	Positions of existing Control Points and its types		
	3 rd	Adjacent Boundaries and Features, Topology Creation and verification		
	4 th	PLANE TABLE SURVEYING : Objectives, principles and use of plane table surveying.		
	5 th	used in plane table surveying		
8 th	1 st	Methods of plane table surveying – (1) Radiation		
	2 nd	(2) Intersection, (3) Traversing, (4) Resection.		
	3 rd	4 Statements of TWO POINT and THREE POINT PROBLEM		
	4 th	Errors in plane table surveying and their corrections		
	5 th	precautions in plane table surveying		
9 th	1 st	AND TRAVERSING: Purpose and definition of theodolite surveying		
	2 nd	Transit theodolite- Description of features, component parts		
	3 rd	Fundamental axes of a theodolite, concept of vernier, reading a vernier		
	4 th	Temporary adjustment of theodolite		
	5 th	Concept of transiting –Measurement of horizontal and vertical angles		
10 th	1 st	Measurement of magnetic bearings, deflection angle		
	2 nd	direct angle, setting out angles, prolonging a straight line with theodolite		
	3 rd	Errors in Theodolite observations.		
	4 th	Methods of theodolite traversing with – inclined angle method		

	5 th	Deflection angle method, bearing method,		
11 th	1 st	Plotting the traverse by coordinate method, Checks for open and closed traverse.		
	2 nd	Traverse computation – consecutive coordinates, latitude and departure, Gale’s traverse table,		
	3 rd	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, transit method, graphical method, axis method, calculation of area of closed traverse.		
12 th	1 st	LEVELLING AND CONTOURING : Definition and Purpose and types of leveling		
	2 nd	concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M		
	3 rd	leveling, concepts of line of collimation, axis of bubble tube, axis of		
	4 th	Levelling staff – Temporary adjustments of level, taking reading with level,		
	5 th	concept of bench mark, BS, IS, FS, CP, HI.		
	1 st	Field data entry – level Book – height of collimation method and Rise & Fall method		

13 th	2 nd	Comparison, Numerical problems on reduction of levels applying both methods, Arithmetic checks.		
	3 rd	effects of curvature and refraction, numerical problems on application of correction		
	4 th	Reciprocal leveling – principles, methods, numerical problems, precise leveling.		
	5 th	Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels		
14 th	1 st	Methods of contouring, plotting contour maps, Interpretation of contour maps,		
	2 nd	Use of contour maps on civil engineering projects – drawing crosssections from contour maps,		
	3 rd	Locating proposal routes of roads / railway / canal on a contour map,		
	4 th	Computation of volume of earthwork from contour map for simple structure.		
	5 th	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.		
	1 st	ASSIGNMENT		

15 th	2 nd	COMPUTATION OF AREA & VOLUME: Determination of areas, computation of areas from plans		
	3 rd	Calculation of area by using ordinate rule		
	4 th	Trapezoidal rule, Simpson's rule		
	5 th	DOUBT CLEAR CLASS		

HOD

Tejaswini Das

DEAN

Chittaranjan Parida

PRINCIPAL

