LESSON PLAN FOR SUMMER SESSION (2022-23)

Discipline: Civil Engineering	Semester-4th	Name of Teaching Faculty: Subrat Kumar Panigrahi	
Subject: Land Surveying-I	No. of days per week class alloted: 5P/W	Semester From date- 14.02.2023 To date- 23.05.2023 No. of weeks- 14 Total Perios-70 P	

WEEK	PERIODS	UNITS	TOPICS
Feb. 3rd Week	1	1	**INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS:** 1.1 Surveying: Definition, Aims and objectives
	2	1	1.2 Principles of survey-Plane surveying- Geodetic Surveying- Instrumental surveying.
	3	1	1.3 Precision and accuracy of measurements, instruments used for measurement of distance, Types of tapes and chains.
	4	1	1.4 Errors and mistakes in linear measurement – classification, Sources of errors and remedies.
	5	1	Doubt clearing class
Feb. 4th Week	6	2	**CHAINING AND CHAIN SURVEYING :** 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.
	7	2	2.3 Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-features and use, slope correction.
	8	2	2.4 Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles.
	9	2	2.5 Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines.
	10	2	2.7 Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.
Mar. 1st Week	11	2	2.8 Errors in chain
	12	3	**ANGULAR MEASUREMENT AND COMPAS SURVEYING :** 3.1 Measurement of angles with chain, tape & compass 3.2 Compass – Types, features, parts, merits & demerits, testing & adjustment of compass
	13	3	3.3 Designation of angles- concept of meridians – Magnetic, True, arbitrary; Concept of bearings – Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of application, numerical problems on conversion of bearings
	14	3	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.
	15	3	3.5 Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination.
Mar. 2nd Week	16	3	3.6 Errors in angle measurement with compass – sources & remedies.
	17	3	3.7 Principles of traversing – open & closed traverse, Methods of traversing. 3.8 Local attraction – causes, detection, errors, corrections
	18	3	Numerical problems of application of correction due to local attraction.
		3	Numerical problems of application of correction due to local attraction.
	19	3	3.9 Errors in compass surveying – sources & remedies
	20	3	Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table
Mar. 3rd Week	21	3	Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table
	22	3	Doubt Clearing Class & Previous year question Paper discussion.
	23	3	Monthly Test-1
	24	4	**MAP READING CADASTRAL MAPS & NOMENCLATURE:** 4.1 Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols
	25	4	4.2 Cadastral Map Preparation Methodology
Mar. 4th Week	26	4	4.3 Unique identification number of parcel
	27	4	4.4 Positions of existing Control Points and its types
		4	4.5 Adjacent Boundaries and Features, Topology Creation and verification.
	28	5	**PLANE TABLE SURVEYING :** 5.1 Objectives, principles and use of plane table surveying.
	29	5	5.2 Instruments & accessories used in plane table surveying.
	30	5	5.3 Methods of plane table surveying – (1) Radiation, (2) Intersection,
Apr.1st Week	31	5	(3) Traversing, (4) Resection.
	32	5	5.4 Statements of TWO POINT and THREE POINT PROBLEM
	33	5	Errors in plane table surveying and their corrections, precautions in plane table surveying.
	34	5	**INTERNAL ASSESSMENT EXAM**
	35	6	**THEODOLITE SURVEYING AND TRAVERSING:** 6.1 Purpose and definition of theodolite surveying
		6	6.2 Transit theodolite- Description of features, component parts, Fundamental axes of a theodolite

Week	No.	Unit	Topic
Apr. 2nd Week	36	6	Concept of vernier, reading a vernier, Temporary adjustment of theodolite
	37	6	6.3 Concept of transiting –Measurement of horizontal and vertical angles.
	38	6	6.4 Measurement of magnetic bearings, deflection angle, direct angle
	39	6	setting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations
	40	6	6.5 Methods of theodolite traversing with – inclined angle method, deflection angle method
Apr. 3rd Week	41	6	bearing method, Plotting the traverse by coordinate method, Checks for open and closed traverse.
	42	6	6.6 Traverse computation – consecutive coordinates, latitude and departure,
	43	6	Gale's traverse table,
	44	6	Numerical problems on omitted measurement of lengths & bearings
	45	6	6.7 Closing error – adjustment of angular errors, adjustment of bearings, numerical problems
Apr. 4th Week	46	6	6.7 Closing error – adjustment of angular errors, adjustment of bearings, numerical problems
	47	6	6.8 Balancing of traverse – Bowditch's method, transit method, graphical method, axis method, calculation of area of closed traverse.
	48	6	Monthly Test-2
	49	7	LEVELLING AND CONTOURING : 7.1 Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M.
	50	7	7.2 Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.
Apr. 5th week	51	7	7.3 Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI.
	52	7	7.4 Field data entry – level Book – height of collimation method and Rise & Fall method,
	53	7	Numerical problems on reduction of levels applying both methods, Arithmetic checks. Comparision.
	54		Numerical problems on reduction of levels applying both methods, Arithmetic checks. Comparision.
	55	7	7.5 Effects of curvature and refraction, numerical problems on application of correction.
May. 1st Week	56	7	7.6 Reciprocal leveling – principles, methods, numerical problems, precise leveling.
	57	7	7.7 Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
	58	7	7.8 Definitions, concepts and characteristics of contours.
	59	7	7.9 Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.
	60	7	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 structure.
May. 2nd Week	61	7	7.11 Map Interpretation: Interpret Human and Economic Activities (i.e.: Settlement, Communication, Land use etc.)
	62	7	Interpret Physical landform (i.e.: Relief, Drainage Pattern etc.), Problem Solving and Decision Making
	63	7	Doubt Clearing Class & Previous year question Paper discussion.
	64	7	Doubt Clearing Class & Previous year question Paper discussion.
	65	8	COMPUTATION OF AREA & VOLUME: 8.1 Determination of areas, computation of areas from plans.
May.3rd week	66	8	8.2 Calculation of area by using ordinate rule, trapezoidal rule, Simpson's rule
	67	8	8.3 Calculation of volumes by prismoidal formula and trapezoidal formula
	68	8	Prismoidal corrections, curvature correction for volumes.
	69	8	Doubt Clearing Class & Previous year question Paper discussion.
	70	8	Doubt Clearing Class & Previous year question Paper discussion.

Concern faculty   13.2.23

HOD   13.2.23
Civil engineering

Academic Coordinator
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Principal
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