LESSON PLAN OF LAND SURVEY -I 4th Sem 2022-2023

UNIT	TOPIC	PERIOD
INTRODUCTION TO SURVEYING, LINEAR MEASUREMENTS	Surveying: Definition, Aims and objectives	1
	Principles of survey-Plane surveying- Geodetic Surveying- Instrumental surveying.	2
	Precision and accuracy of measurements, instruments used for measurement of distance, Types of tapes and chains.	3
	Errors and mistakes in linear measurement – classification, Sources of errors and remedies.	4
	Corrections to measured lengths due to-incorrect length, temperature variation, pull, sag, numerical problem applying corrections.	5
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	Revision	7
CHAINING AND CHAIN SURVEYING	Equipment and accessories for chaining. Ranging – Purpose, signaling, direct and indirect ranging, Line ranger – features and use, error due to incorrect ranging.	8
	Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-features and use, slope correction.	9
	Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles.	10
	Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines.	11
	Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.	12
	Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying.	13
	Numerical practice.	14
ANGULAR MEASUREMENT AND COMPAS SURVEYING	Measurement of angles with chain, tape & compass Compass – Types, features, parts,merits & demerits, testing & adjustment of compass	15
	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	16
	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.	17
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	Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination	19
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	Errors in angle measurement with compass – sources & remedies. Principles of traversing – open & closed traverse, Methods of traversing.	21
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	Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction.	23
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	Errors in compass surveying – sources & remedies.	25

	Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table	26
MAP READING CADASTRAL MAPS & NOMENCLATURE	Study of direction, Scale, Grid Reference and Grid Square Study of Signs and Symbols	27
	Cadastral Map Preparation Methodology	28
	Unique identification number of parcel	29
	Positions of existing Control Points and its types	30
	Adjacent Boundaries and Features, Topology Creation and verification.	31
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	Instruments & accessories used in plane table surveying.	35
	Methods of plane table surveying – (1) Radiation, (2) Intersection, (3) Traversing, (4) Resection	36
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THEODOLITE SURVEYING AND TRAVERSING	Purpose and definition of theodolite surveying.	41
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	Measurement of magnetic bearings, deflection angle, direct angle, setting out angles, prolonging a straight line with theodolite, Errors in Theodolite observations.	46
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	Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method, Plotting the traverse by coordinate method, Checks for open and closed traverse.	48
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	Traverse computation – consecutive coordinates, latitude and departure, Gale's traverse table, Numerical problems on omitted measurement of lengths & bearings	50
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	Closing error – adjustment of angular errors, adjustment of bearings, numerical problems	52
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	Balancing of traverse – Bowditch's method, transit method, graphical method, axis method, calculation of area of closed traverse.	54
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SLEVELLING AND CONTOURING	Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M.	56
	Instruments used for leveling, concepts of line of collimation, axis of bubble tube, axis of telescope, Vertical axis.	57
	Levelling staff – Temporary adjustments of level, taking reading with level, concept of bench mark, BS, IS, FS, CP, HI.	58
	Field data entry – level Book – height of collimation method and Rise & Fall method, comparison, Numerical problems on reduction of levels applying both methods, Arithmetic checks.	59
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	Effects of curvature and refraction, numerical problems on application of correction.	61

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	Definitions, concepts and characteristics of contours.	65
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	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	69
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COMPUTATION OF AREA & VOLUME	Determination of areas, computation of areas from plans.	71
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