ACADEMIC LESSION PLAN FOR SUMMER SEMESTER JULY 2022 .

Deptt. Of Civil Engg. , Govt. Polytechnic ,Balasore.

Name of the Faculty : BIKASH KUMAR PATRA Lect.(CIVIL)

LAND SURVEY -1

Course Code	:	*TH-3*		
Theory	:	5 P/W	Class Test	: 20 Marks
Total Period s	:	75P/Sem	End Semester Exam	: 80marks
Examination	:	3 Hours	TOTAL MARKS	: 100 Marks
Sem	:	4th Civil	Start	: 10th MARCH 2022

WEEK	PERIOD	TOPIC
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.Errors and mistakes in linear measurement – classification,
	5th	Sources of errors and remedies ,Corrections to measured lengths due to-incorrect length, numerical problem applying corrections.
2nd	1st	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 indirect ranging, Line ranger – features and use, error due to incorrect ranging.
	5th	Methods of chaining –Chaining on flat ground, Chaining on sloping ground – stepping method, Clinometer-features and use, slope correction.
3rd	1st	Setting perpendicular with chain & tape, Chaining across different types of obstacles –Numerical problems on chaining across obstacles.
	2nd	Purpose of chain surveying, Its Principles, concept of field book. Selection of survey stations, base line, tie lines, Check lines.
	3rd	Offsets – Necessity, Perpendicular and Oblique offsets, Instruments for setting offset – Cross Staff, Optical Square.
	4th	Errors in chain surveying – compensating and accumulative errors causes & remedies, Precautions to be taken during chain surveying.
	5th	**ANGULAR MEASUREMENT AND COMPAS**

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Barna 31.03.22
Barna 04.04.22
Barna 05.04.22
Barna 11.04.22
Barna 12.04.22
Barna 18.04.22
Barna 19.04.22
Barna 21.04.22
Barna 25.04.22

		SURVEYING : Measurement of angles with chain, tape & compass.
4th	1st	Compass – Types, features, parts, merits & demerits,
	2nd	testing & adjustment of compass, Designation of angles- concept of meridians – Magnetic, True, arbitrary.
	3rd	Concept of bearings – Whole circle bearing, Quadrantal bearing, Reduced bearing, suitability of application.
	4th	Numerical problems on conversion of, Use of compasses – setting in field-centering, leveling, taking readings.
	5th	concepts of Fore bearing, Back Bearing, Numerical problems on computation of interior & exterior angles from bearings.
5th	1st	Effects of earth's magnetism – dip of needle, magnetic declination, variation in declination, numerical problems on application of correction for declination.
	2nd	Errors in angle measurement with compass – sources & remedies.
	3rd	Principles of traversing – open & closed traverse, Methods of traversing.
	4th	Local attraction – causes, detection, errors, corrections, Numerical problems of application of correction due to local attraction.
	5th	Errors in compass surveying – sources & remedies
6th	1st	Plotting of traverse – check of closing error in closed & open traverse, Bowditch's correction, Gales table
	2nd	**MAP READING CADASTRAL MAPS & NOMENCLATURE:** Study of direction, Scale.
	3rd	Grid Reference and Grid Square,Study of Signs and Symbols
	4th	Cadastral Map Preparation Methodology
	5th	Unique identification number of parce
7th	1st	Positions of existing Control Points and its types
	2nd	Adjacent Boundaries and Features, Topology Creation and verification.
	3rd	**PLANE TABLE SURVEYING :** Objectives
	4th	principles and use of plane table surveying.
	5th	Instruments & accessories used in plane table surveying.
8th	1st	Methods of plane table surveying – (1) Radiation, (2) Intersection,
	2nd	(3) Traversing, (4) Resection.
	3rd	Statements of TWO POINT and THREE POINT PROBLEM
	4th	Errors in plane table surveying and their corrections, precautions in plane table surveying
	5th	**THEODOLITE SURVEYING AND TRAVERSING:**

9th	1st	Purpose and definition of theodolite surveying.
		Transit theodolite- Description of features, component parts.
	2nd	Fundamental axes of a theodolite, concept of vernier, reading a vernier.
	3rd	Temporary adjustment of theodolite
	4th	Concept of transiting –Measurement of horizontal and vertical angles.
	5th	Measurement of magnetic bearings, deflection angle, direct angle,
10th	1st	setting out angles, prolonging a straight line with theodolite.
	2nd	Errors in Theodolite observations.
	3rd	Methods of theodolite traversing with – inclined angle method, deflection angle method, bearing method,
	4th	Plotting the traverse by coordinate method, Checks for open and closed traverse.
	5th	Traverse computation – consecutive coordinates, latitude and departure.
11th	1st	Gale's traverse table, Numerical problems on omitted measurement of lengths & bearings
	2nd	Closing error – adjustment of angular errors, adjustment of bearings, numerical problems
	3rd	Balancing of traverse – Bowditch's method, transit method.
	4th	graphical method, axis method, calculation of area of closed traverse.
	5th	**LEVELLING AND CONTOURING :** Definition and Purpose and types of leveling– concepts of level surface, Horizontal surface, vertical surface, datum, R. L., B.M.
12th	1st	nstruments used for leveling, concepts of line of collimation.
	2nd	axis of bubble tube, axis of telescope, Vertical axis.
	3rd	Levelling staff – Temporary adjustments of level
	4th	taking reading with level, concept of bench mark, BS, IS, FS, CP, HI.
	5th	Field data entry – level Book – height of collimation method
13th	1st	Rise & Fall method, comparison, Numerical problems on reduction of levels applying both methods, Arithmetic checks.
	2nd	Effects of curvature and refraction, numerical problems on application of correction
	3rd	Reciprocal leveling – principles, methods, numerical problems, precise leveling
	4th	Errors in leveling and precautions, Permanent and temporary adjustments of different types of levels.
	5th	Definitions, concepts and characteristics of contours

14th	1st	Methods of contouring, plotting contour maps, Interpretation of contour maps, toposheets.
	2nd	Use of contour maps on civil engineering projects – drawing crosssections from contour maps.
	3rd	locating proposal routes of roads / railway / canal on a contour map, computation of volume of earthwork from contour map for simple structure.
	4th	Map Interpretation: Interpret Human and Economic Activities, , Interpret Physical landform, Problem Solving and Decision Making
	5th	**COMPUTATION OF AREA & VOLUME:**Determination of areas, computation of areas from plans.
15th	1st	Calculation of area by using ordinate rule
	2nd	trapezoidal rule,Simpson's rule.
	3rd	Calculation of volumes by prismoidal formula and trapezoidal formula.
	4th	Prismoidal corrections, curvature correction for volumes.