PADMASHREE KRUTARTHA ACHARYA INSTITUTE OF ENGINEERING & TECHNOLOGY, BARGARH

LESSON PLAN

Session-2024-2025

Semester: 4th Discipline: Civil Engg.

Subject: Land Surveying - 1

Name of the Teaching Faculty: Satyanarayan Bhuyan

Subject: Land Surveying - 1 No. of Days/per week class allotted : 05

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
1	1st	Surveying:- Definition, Aims of objective
	2nd	Principle of Survey- Plane Surveying
	3rd	Geodetic Surveying Instrumental Surveying
	4th	Precision & accuracy of measurements Instrument used for measurement of distance, types of tapes & chains.
	5th	Errors & mistakes on linear measurement classification, sources of errors & remedies.
2	1st	correction to measured length due to incorrect length, temperature variation.
	2nd	pull, Sag, numerical problem applying correction.
	3rd	Equipment & accessories for chaining Ranging - purpose, signalling error.
	4th	Methods of chaining, chaining on flat ground, chaining on slopping ground, stepping method, slope correction
	5th	Setting perpendicular with chain & tape, chaining across different types of obstacles. Numerical problems
3	1st	purpose of chain surveying, its concept, field book, Survey Stations, base Line tie Lines, check Lines.
	2nd	offsets, Necessity, perpendicular & oblique offset, cross staff, optical Square.

Satyanarayan Bhuyagar

Signature of the Faculty

Subject: Land Surveying-1 No. of Days/per week class allotted : 05

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	3rd	Errors in chain surveying. compensating & accumulative errors cause & remedies.
	4th	precautions to be taken during chain surveying
	5th	Measurement of angles with chain tape & compass.
4	1st	compass- types, features, parts, merits & demerits, testing & adjustment of compass.
	2nd	Designation of angles, - concept of meridians magnetic, true, arbitrary concepts of bearing.
	3rd	WCB, QB, RB, suitability of application numerical problems on conversion of bearings.
	4th	Uses of compass- Setting in field centering, levelling, taking readings.
	5th	concepts of fore bearing, BB, Numerical problems on computation of interior & exterior angles from bearings.
5	1st	Effects of earth magnetism, dip of needle, magnetic declination, variation in declination, numerical problems.
	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, correction, Numerical problem in application of correction due to local attraction.

Satyanarayan Priyadarshi

Signature of the Faculty

Subject: Land Surveying-1 No. of Days/per week class allotted : 05

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	5th	Errors in compass surveying, source & remedies, plotting of traverse
6	1st	check of closing error in closed & open traverse, Bowditch's correction, Gales table.
	2nd	Study of direction, scale, Grid reference & grid square.
	3rd	Study of sign & symbols of map.
	4th	cadastral map preparation methodology.
	5th	Unique identification number of parcel.
7	1st	positions of existing control points & its types.
	2nd	Adjacent boundaries & features topology creation & verification.
	3rd	Revision about map reading cadastral maps & nomenclature.
	4th	objectives, principles & use of plane table surveying.
	5th	Instrument & accessories used in plane table surveying.
8	1st	methods of plane table surveying Radiation, Intersection.

Satyanarayan Bhuktar

Signature of the Faculty

Subject: Land Surveying - 1 No. of Days/per week class allotted : 05

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	2nd	Methods of plane table Surveying Traversing, Resection.
	3rd	Statements of TWO POINT & THREE POINT PROBLEM
	4th	Errors in plane table Surveying & their corrections precautions in plane table.
	5th	Revision about plane table Surveying.
9	1st	purpose of detection ~~of~~ theodolite Surveying
	2nd	Transit theodolite - Description of features, component parts, Fundamental axis of theodolite.
	3rd	concept of vernier, reading a vernier Temporary adjustment of theodolite.
	4th	concept of transiting - measurement of horizontal & vertical angles.
	5th	Measurement of magnetic bearings, deflection angle, direct angle, Setting out angles.
10	1st	prolong a straight line with theodolite errors in theodolite observations.
	2nd	Methods of theodolite traversing with included angle method, direct angle method, bearing methods
	3rd	plotting the traverse by co-ordinate method, check for open & closed traverse

Satyanarayan Bhuddger

Signature of the Faculty

Subject: Land Surveying - 1 No. of Days/per week class allotted : 05

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	4th	Traverse computation, consecutive co-ordinate latitude & departure, Gates traverse table.
	5th	Numerical problem on omitted measurement of length & bearings.
11	1st	closing error. adjustment of angular error.
	2nd	closing error. adjustment of bearings numerical problems.
	3rd	Balancing of traverse, Bowditch method, transmit method, graphical method.
	4th	Balancing of traverse, - axis method, calculation of area of closed traverse.
	5th	Revision about theodolite Surveying of traverse
12	1st	definition & purpose & type of levelling, concept of level surface
	2nd	concept of horizontal surface vertical surface, datum, R.L. B.M.
	3rd	Instrument used for levelling concept Line of collimation, axis of bubble tube, axis of telescope, vertical axis.
	4th	levelling staff - temporary adjustment of level taking reading with level.
	5th	concept of bench mark, BS, IS, FS CP, HI.

Satyanarayan Bhuyagar

Signature of the Faculty

Subject: Land Surveying - I No. of Days/per week class allotted : 05

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
13	1st	Field data entry - level book, height of collimation method & rise fall method comparison.
	2nd	Numerical problems on reduction of levels applying both methods, Arithmatic checks.
	3rd	Effects of curvature & refraction numerical problems on application of correction.
	4th	Reciprocal levelling - principle, methods numerical problems, precise levelling.
	5th	Errors in levelling & precautions permanent & tempory adjustment of different types of levels of levels.
14	1st	Definitions concepts & characteristics of contours, method of contouring, plotting contour map, interpretation of contour map.
	2nd	Use of contour maps in civil Engg. Projects drawing cross section from contour maps locating proposal routes of roads/railways.
	3rd	canal on a contour map computation of volume of earthwork, from contour map for simple structure.
	4th	Map interpretation, interpret human & economic activities, settlement communication land use etc.
	5th	Interpret physical land from (i.e Relief drainage, pattern etc). problem solving & decision making.
15	1st	Determination of areas. computation of area from plan
	2nd	calculation of area by using ordinate rule.

Satyanarayan Bhusdgar

Signature of the Faculty

Subject: Land Surveying -1 No. of Days/per week class allotted : 05

Semester From Date : 4-2-25 To Date: 17-5-25 No. of Weeks : 15

Week	Class Day	Theory /Practical Topics
	3rd	calculation of area by using trapezoidal rule, Simpson's rule
	4th	calculation of volumes by prismoidal formula & trapezoidal formula
	5th.	prismoidal corrections, curvature correction for volume, Revision of computation of area & volume.

Satyanarayana Bhuvanagiri

Signature of the Faculty