

Objective: To ensure that the student develops knowledge in the working of advanced instruments, setting out of curves from the field measurements and basic knowledge on remote sensing

UNIT-I

Trigonometric Leveling : Introduction; Determination of the level of the top of an object, When its base is accessible and When its base is not accessible; Determination of the height of the object when the two instrument stations are not in the same vertical plane; Axis signal correction; Difference in elevation by single observation and reciprocal observations.

UNIT-II

Tacheometric Surveying: Definition, Advantages of Tacheometric surveying- Basic systems of tacheometric measurement , Principle of stadia measurements, Determination of constants K and C, Inclined sight with staff vertical; Inclined sight with staff normal to the line of sight, Movable hair method, Tangential method, Subtense bar, Errors in Tacheometry.

UNIT-III

Triangulation: Principles of triangulation, Uses of triangulation survey; Classification of triangulation; operations of triangulation survey; Signals and towers, Satellite station; Base line & Extension of the base line.

Setting Out Works: Introduction, Control stations; Horizontal control; Reference grid; Vertical control; Positioning of a structure; offset pegs, Setting out a foundation: reference pillars, batter boards, Setting out with a theodolite; Graded stakes; setting out a sewer; Setting out a culvert.

UNIT-IV

Curves: Simple curves–Definitions and Notations, designation of a curve, Elements of simple curves, location of tangent points, selection of peg interval, Methods of setting simple curves(based on equipment) – Rankines method, Two theodolite method. Compound curves – Elements of compound curve, setting out compound curve. Reverse curves – Elements of reverse curve, relationship between various elements.

UNIT-V

Electronic Distance Measurements: Introduction, Basic concepts-electromagnetic waves, basic definitions, phase of the wave ,units, types of waves; distance from measurement of transit time, Computing the distance from the phase differences, , EDM instruments, electronic theodolites, total station-models, fundamental measurements, recording, traversing, data retrieval.



Remote Sensing: Introduction, Principle of Remote sensing, EM Radiation and the atmosphere, interaction of EM radiation with earth's surface, remote sensing observation platforms, sensors, applications of remote sensing. Geographical Information System: Introduction and principle of Geographical Information System, components of GIS, applications.

Text Books:

1. Surveying Vol. 1 & II by Dr. K. R. Arora; Standard Book House;
2. Surveying Vol-I&II by B.C. Punmia ,Laxmi Publications
3. Higher Surveying by Chandra, New age Pubilishers

Reference Books:

1. Surveying Vol. 1 and 2 – By S.K. Duggal. Tata Mc. Graw Hill Publishing Co.
2. Surveying and Levelling by Kanetkar T.P., and Kulkarni , Vols. I and II, United Book Corporation, Pune, 1994.
- 3.Principles of GIS for land resource assessment by P.A. Burrough –Clerendon Press, Oxford.
4. Advanced Surveying by Mahajan, Santhos K. Dhanpat Rai & Sons, Nai Sarak, Delhi, 1987.
5. Remote sensing and Image Interpretation by Lillesand,T.M.,and Kiefer R.W., John Wiley and Sons, Inc, New York,1997
6. Advanced Surveying: Total Station, GIS and remote Sensing by R. Sathikumar, Satheesh Gopi and N. Madhu, Pearson Education, India

