

## INTRODUCTION TO SURVEYING

### Course Learning Objectives:

To introduce the students to basic principles of surveying, various methods of linear and angles measuring instruments and enable the students to use surveying equipments.

### Course Outcomes:

Upon successful completion of the course, the student will be able:

- To demonstrate the basic surveying skills
- To use various surveying instruments.
- To perform different methods of surveying
- To compute various data required for various methods of surveying.
- To integrate the knowledge and produce topographical map.

## SYLLABUS

### UNIT I

**Introduction:** Definition-Uses of surveying- overview of plane surveying (chain, compass and plane table), Objectives, Principles and classifications – Errors in survey measurements

**Distance & Direction:** Distance Measurement Methods, use of Chain and Tape, Meridians, Azimuths and Bearings, declination, computation of angle.

### UNIT II

**Leveling And Contouring: Definitions,** Concept and Terminology, Leveling Instruments and their Temporary and permanent adjustments- methods of leveling. Characteristics and Uses of contours- methods of conducting contour surveys.

### UNIT III

**Theodolite:** Description, principles-uses and adjustments – temporary and permanent, measurement of horizontal and vertical angles. Principles of Electronic Theodolite – Introduction to Trigonometrical leveling.

**Tachometric Surveying:** Stadia and tangential methods of Tacheometry. Distance & elevation formulae for Staff vertical position.

### UNIT IV

**Curves:** Types of curves, design and setting out – simple curves-Introduction to geodetic surveying, Total Station and Global positioning system

### UNIT – V

**Computation Of Areas And Volumes:** Area from field notes, computation of areas along irregular boundaries and area consisting of regular boundaries. Embankments and cutting for a level section and two level sections with and without transverse slopes, determination of the capacity of reservoir, volume of barrow pits.

**TEXT BOOKS:**

1. Surveying, Vol No.1, 2 &3, B. C. Punmia, Ashok Kumar Jain and Arun Kumar Jain – Laxmi Publications Ltd, New Delhi.
2. Advance Surveying, SatishGopi, R. Sathi Kumar and N. Madhu, PearsonPublications.
3. Text book of Surveying, C. Venkataramaiah, University press, India Limited.
4. Surveying and levelling, R. Subramanian, Oxford University press.

**REFERENCES:**

1. Text book of Surveying, S.K. Duggal (Vol No. 1&2), Tata McGraw Hill Publishing Co. Ltd. New Delhi.
2. Text book of Surveying, Arora (Vol No. 1&2), Standard Book House, Delhi.
3. Higher Surveying, A.M. Chandra, New Age International Pvt ltd.
4. Fundamentals of surveying, S.K. Roy – PHI learning (P) ltd.
5. Plane Surveying, Alak de, S. Chand & Company, New Delhi.