

## CE-3004 ADVANCE SURVEYING & REMOTE SENSING

### COURSE OBJECTIVE

To introduce the student to the importance and objectives of surveying. The course would begin with the basic concepts of surveying and move on to discuss advancements such as GIS and Remote Sensing.

### COURSE CONTENTS

**Introduction** :Basic Definitions of Surveying and Levelling , Principles , Classification of surveying ,Methods of Linear Measurement Ranging , Accessories for linear measurement ,Chain Surveying , Compass Surveying , Plane Table Surveying , Computation of Area and Volumes

**Theodolite Traversing & Types**:Digital levels and theodolites, Electronic Distance measurement (EDM), Total Station and Global Positioning Systems (GPS), Digital Planimeter.

**Control Surveys**:Providing frame work of control points, triangulation principle, co naissance, selection and marking of stations, angle measurements and corrections, baseline measurement and corrections, computation of sides, precise traversing

**GPS Surveying**: Introduction & components of GPS, Space segment, control segment and user segment, Elements of Satellite based surveys-Map datums, GPS receivers, GPS observation methods and their advantages over conventional methods.

**Remote Sensing & GIS** : Principle, components, classification, remote sensing data acquisition process, different types of remote sensing satellite imagery with special relevance to Indian Remote Sensing Satellites (IRS) and applications. GIS-Definition, components and advantages.

### COURSE OUTCOME

The student will be able to understand the basic principles of surveying and how they are implemented in practice.

The student will be able to adjust for errors that occur in practising of various surveying methods. The student will be able to plan a survey for applications such as road alignment and height of the building.

**Surveying Project** - Student will go for a week-long Surveying Camp and carry out a Project Work.

### REFERENCES

1. B.C Punmia , *Surveying Vol-II & III* ,Laxmi Publication.
2. S.K. Duggal, *Surveying Vol. II* McGraw Hill Publishing Company Ltd.
3. Saikia MD, Das BM, Das MM, *Surveying*, McGraw hill
4. T.P. Kanetkar & S.V. Kulkarni *Surveying and Leveling-Part-I & II* , Pune Vidyarthi Griha Prakashan, Pune.
5. Gopi A, Satikumar R- *Advance surveying*, Pearson
6. *Remote Sensing and image interpretation* by Lillesand T.M. and Kiefer R.W.
7. R.Agor, *Advance Surveying* ,Khanna Publisher
8. Chandra AM, *Higher Surveying*, New Age International, new Dwlhi
9. Bhavikatti SS, *Surveying and Levelling Vol. II*, I.K International
10. Venkatramaiah, *Surveying*, University Press, Mumbai
11. Bhatta Basudeb, , *Remote Sensing and GIS*, Oxford, New Delhi.
12. Subramanaian, *Surveying & levelling*, Oxford, New Delhi.
13. Joseph George *Fundamentals of Remote Sensing*

## **List of Practical**

1. Measurement of Distance by Chaining and Ranging.
2. Locating Various Objects by Chain or Cross-Staff Surveying.
3. Measurement of bearings of sides of traverse with prismatic compass and computation of correct included angle.
4. Determination of elevation of various points with dumpy level by collimation plane method and rise & fall method.
5. Fixing bench mark with respect to temporary bench mark with dumpy level by fly levelling and check levelling.
6. Measurement of vertical angles with theodolite.
7. Determination of horizontal distance between two inaccessible points with theodolite.
8. Locating given building by theodolite traversing.