

2/4 B.Tech. THIRD SEMESTER

CE3T5

SURVEYING

Credits: 4

Lecture: 4 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

Objectives:

- To learn the methods of compass and plane table survey to measure the land area and prepare layout maps.
- To gain knowledge on the preparation contour and elevation maps.
- To learn various aspects of total station.

Learning outcomes:

At the end of course the student will have:

- Knowledge of the basic principles, objectives and classification of surveying and of important terms in surveying like azimuths, meridian, bearing etc.
- Understanding of the working principles and applications of Dumpy level, Theodolite, Tachometer.
- Ability to use the advanced surveying instruments viz. Total station and Global Positioning System.

UNIT – I

INTRODUCTION:

Overview of plane surveying (chain, compass and plane table), Objectives, Principles and classifications.

UNIT – II:

DISTANCES AND DIRECTION:

Distance measurement conventions and methods; use of chain and tape, Electronic distance measurements, Meridians, Azimuths and Bearings, declination, computation of angle.

UNIT – III

LEVELING AND CONTOURING:

Concept and Terminology, Temporary and permanent adjustments- method of leveling. Characteristics and Uses of contours- methods of conducting contour surveys and their plotting.

UNIT – IV

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.

UNIT – V

THEODOLITE:

Theodolite, description, uses and adjustments – temporary and permanent, measurement of horizontal and vertical angles. Principles of Electronic Theodolite. Trigonometrical leveling, Traversing.

UNIT – VI

TACHEOMETRIC SURVEYING:

Stadia and tangential methods of Tacheometry. Distance and Elevation formulae for staff vertical position.

UNIT – VII

CURVES:

Types of curves, design and setting out – simple and compound curves.

UNIT – VIII

GEODETTIC SURVEYING:

Introduction to geodetic surveying, Total Station and Global positioning system, Introduction to Geographic information system (GIS).

Learning resources

Text books:

1. Surveying (Vol. – 1, 2 & 3) by Punmia, B.C., Jain, A.K., Laxmi Publications (P) Ltd., New Delhi, 2005.
2. Surveying (Vol–1& 2), (3rd edition) Duggal, S.K., Tata McGraw-Hill, New Delhi, 2009.
3. Surveying and leveling by Subramanian R., Oxford University Press, New Delhi, 2008.

Reference books:

1. Elements of Plane Surveying by Arthur, R Benton, and Philip, J Taety., Tata McGraw-Hill, 2000.
2. Surveying Vol 1, 2 & 3, (12th edition) by Arora, K.R., Standard Book House, Delhi, 2011.
3. Plane Surveying by Chandra A.M., New Age International Pvt. Ltd Publishers, New Delhi, 2002.
4. Higher Surveying by Chandra, A.M., New Age International Pvt. Ltd Publishers, New Delhi, 2002.