

## 2/4 B.Tech. THIRD SEMESTER

CE3T5

SURVEYING

Credits: 3

Lecture: 3 periods/week

Internal assessment: 30 marks

Tutorial: 1 period /week

Semester end examination: 70 marks

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**Pre-requisites:** Engineering mathematics

**Learning 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.

**Course outcomes:**

At the end of course the student will have ability to:

1. Comprehend the principles of chain, compass, plane table and distance
2. Analyze directions, levelling and contouring
3. Analyze and computation of Areas and Volumes
4. Use Theodolite and Tachometric Surveying
5. Use Curves and advanced instruments

### UNIT – I

#### INTRODUCTION

:

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

#### DISTANCES

Distance measurement conventions and methods; use of chain and tape, Electronic distance measurements.

### UNIT – II

#### DIRECTION:

Meridians, Azimuths and Bearings, declination, computation of angle.

#### 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 – III

#### COMPUTATION OF AREAS

Area from field notes, computation of areas along irregular boundaries and area consisting of regular boundaries.

**COMPUTATION OF VOLUMES:** 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 – IV**

### **THEODOLITE**

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

### **TACHEOMETRIC SURVEYING:**

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

## **UNIT – V**

### **CURVE S**

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

### **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), (3<sup>rd</sup> 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, (12<sup>th</sup> 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.

### **e-learning resources:**

<http://nptel.ac.in/courses.php>  
<http://jntuk-coeerd.in/>