SURVEYING

Course Code: 15CE1101

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Course Outcomes:

At the end of the course the student will able to:

CO 1 Describe the principles and classification of surveying, Calculate horizontal and angular measurements.

CO 2 Measure levels and draw contours.

CO 3 Assess areas of irregular boundaries, volumes of borrow pits, embankments and capacity of reservoirs.

CO 4 Describe the various components of Theodolite. Prepare theodolite traversing including closing error and trigonometric levelling.

CO 5 Learn applications of Total Station surveying.

UNIT-I (10 Lectures)

INTRODUCTION:

Definition of Surveying, Overview of plane surveying (chain and compass), Objectives, Principles and Classifications.

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-II (10 Lectures)

LEVELLING AND CONTOURING:

Levelling: Introduction and Terminology, Temporary adjustments, methods of levelling, plotting of L.S & C.S.

Contouring: Uses of contours, Methods of conducting contour surveys and their plotting. Contour gradient-Uses of contour maps.

UNIT-III (10 Lectures)

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 borrow pits.

UNIT-IV (10 Lectures)

THEODOLITE:

Types of theodolites-Temporary Adjustments of theodolite, Measurement of horizontal angle -Method of repetition and reiteration, Measurement of vertical angle – Uses of theodolite-Errors of a theodolite, Trigonometrical Levelling, Traversing.

UNIT-V (10 Lectures)

TOTALSTATION:

Introduction to Total Station instrument and its components. Brief description of important operations, Applications of Total Station, Advantages and Disadvantages of Total Station surveying.

TEXT BOOKS:

1. B.C.Punmia, Ashok Kumar Jain and Arun Kumar Jain, *"Surveying" (Vol–1&2)*, 18th Edition by Laxmi Publications (P) Ltd., New Delhi, 2011.
2. Duggal S K, *"Surveying"* (Vol – 1&2), 10th Edition, Tata McGraw Hill Publishing Co. Ltd. New Delhi, 2004.
3. R Subramanian, *"Surveying and Levelling"*, 2nd Edition, Oxford University Press, New Delhi, 2012.

REFERENCES:

1. Arthur R Benton and Philip J Taety, *"Elements of Plane Surveying"* 8th Edition, McGraw Hill-2000, 2010.
2. Arora K R *"Surveying"* (Vol 1, 2 & 3) 9th Edition, Standard Book House, Delhi, 2008.
3. Chandra A M, *"Plane Surveying"*, New age International Pvt. Ltd., Publishers, New Delhi, 2009.