

SURVEYING - II

Course Code: 13CE1103

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Course Educational Objectives:

- ❖ To develop an understanding of the importance of Advanced Surveying techniques.
- ❖ To impart the knowledge of Trigonometric levelling and Setting out of curves.
- ❖ To familiarize the Student with theodolites and Advanced Surveying equipment.

Course Outcomes:

- ❖ To impart experimental skills to determine the heights and distances of inaccessible objects.
- ❖ Student will demonstrate the ability to identify and solve problems relevant to surveying.
- ❖ Students will have the confidence to apply surveying techniques to align highway and railway curves.

UNIT-I

(12 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 and Permanent adjustments of a theodolite.

UNIT-II

(10 Lectures)

TRAVERSING :

Theodolite traversing – Open and closed traverse – Closing errors, balancing the error – Bowditch method – Transit method, omitted measurements.

Trigonometric levelling – Elevation of top of the tower - same plane - Different planes – Axis signal correction.

UNIT-III

(14 Lectures)

TACHEOMETRY:

Tacheometry – Principle of tacheometry – Stadia methods – Fixed hair method – Movable hair method – Tangential method – Subtense bar – Beaman’s stadia Arc.

Triangulation – Classification-inter visibility of station – Signals and towers-base line measurements – Corrections – Satellite station and Reduction to centre – Base net.

UNIT-IV

(15 Lectures)

CURVES

TYPES OF CURVES:

Simple curves – Elements of simple curves – Methods of setting simple curves – Rankine’s method – Two theodolite method – Compound curves – Elements of compound curves. Reverse curves – Elements of reverse curve – Determination of various elements – Transition curves - Setting out methods.

UNIT-V

(08 Lectures)

ADVANCED SURVEYING:

Introduction to geodetic surveying, Total station and global positioning system- Introduction to Geographic Information System (GIS)

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.

REFERENCES:

1. Arthur R Benton and Philip J Taety, “*Elements of Plane Surveying*” 8th edition, McGraw Hill – 2000, 2010.

2. Chandra A M, “*Plane Surveying*”, 4th Edition, New Age International Pvt. Ltd. New Delhi, 2009.
3. Arora K R “*Surveying*” (Vol 1, 2 & 3), 9th Edition, Standard Book House, Delhi, 2008.

