

22BEAS111 SURVEYING AND LEVELLING

Hours Per Week :

L	T	P	C
1	2	2	3

PREREQUISITE KNOWLEDGE: Basic concept of Surveying.

COURSE DESCRIPTION AND OBJECTIVES:

This course provides an understanding and application of principles of surveying. The objective of this course is to provide basic knowledge about taking measurements using different instruments like chain, tape, auto level, theodolite and total station.

MODULE-1

UNIT-1

4L+8T+8P=20 Hours

LINEAR DISTANCES AND ANGLES:

Surveying, Principles of surveying and Maps. Chain and Tape: Principle, Basic Definitions, Equipment and Accessories. Compass: Principle, Bearing types and its designations, Instruments. Plane Table: Accessories and Orientation

UNIT-2

4L+8T+8P=20 Hours

FIELD MEASUREMENTS :

Chain: Field Procedure and its linear measurements with chain and Tape, Errors and Corrections. Compass: Traversing using Compass, Local Attraction and Its Correction. Plane Table: Field procedure and Its Methods.

PRACTICES:

PROBLEMS ON NUMBER CRUNCHING:

- Chaining of a line using Chain / Tape and Recording of details along the chain line.
- Obstacles in chaining.
- Measurement of Area using Chain and Tape.
- Traversing using Compass.
- Plane Table Surveying using Radiation method.

MODULE-2

UNIT-2

4L+8T+8P=20 Hours

THEODOLITES AND ELECTRONIC DISTANCE EQUIPMENTS:

Levelling: Principle, Basic Definition, Classification and Its Methods, Theodolite and Auto Level. Contours and Curves: Characteristics and Elements of curve. Electronic Distance Measurements: Principle, Types of EDM, Total Station Drone Survey, aerial triangulation.

UNIT-2

4L+8T+8P=20 Hours

FIELD PROCEDURE AND ITS MEASUREMENTS:

General Procedure of levelling and Measurement of Horizontal Angles, Vertical Angles. Electronic Distance Measurements: Total Station Survey Drone Flight Planning.



Source: <https://iirp.cdn-website.com/d9905c31/dms3rep/multi/opt/Vancouver+Land+Survey-or+Pros>

PRACTICES:

- Measurement of elevation difference between two points using any levelling Instrument.
- Measurement of Horizontal and vertical Angles.
- Estimation of Height of Building.
- Study of instrument, determination of distances, directions and elevations.
- Identifying boundaries and Determination of area using total station.

COURSE OUTCOMES:

Upon successful completion of this course, students will have the ability to:

CO No.	Course Outcomes	Blooms Level	Module No.	Mapping with POs
1	Articulate in basic principles of surveying using chain, tape and plane table.	Apply	1	1, 2, 5
2	Illustrate the basic concepts of Levelling, theodolite and Total station.	Apply	2	1, 4, 5, 6
3	Computing the linear and Mapping measurements using metric chain, tape, compass and plane table.	Evaluate	1	1, 2, 8, 9, 10
4	Determine the bearings, height and positional measurements using Total station, theodolite and levelling.	Evaluate	2	1, 2, 4, 5, 8

TEXT BOOKS:

1. Basak N N, Surveying and Levelling", 2nd Edition McGraw Hill Education, 2017.
2. Bhavikatti, S.S., Surveying and Levelling, Vol. I and II, I. K. International, 2019.

REFERENCE BOOK:

1. Chandra, A.M., Higher Surveying, Third Edition, New Age International (P) Limited, 2015.

SKILLS:

- ✓ Ability to do chaining on a plain and steep ground.
- ✓ Mastery of usage of chain, tape and Plain table.
- ✓ Proficiency in usage of compass and theodolite for measuring bearings.
- ✓ Illustration of total station parts and measurements.