

Course No
CE 203

Course Name
SURVEYING

L-T-P-Credits
(3- 0/1- 0:3/4)

Prerequisite: nil;

Co requisite: nil

Course Objectives:

1. To understand the basic concepts of Surveying & levelling
2. To develop methods through the knowledge of modern science and technology and use them in the field
3. To solve measurement problems in an optimal way

Course Outcomes:

1. To carry out preliminary surveying in the field of civil engineering applications such as structural, highway engineering and geotechnical engineering.
2. To plan a survey, taking accurate measurements, field booking, plotting and adjustment of traverse.
3. To use various conventional instruments involved in surveying with respect to utility and precision.
4. To plan a survey for applications such as road alignment and height of the building.

SYLLABUS

Module	Contents	Hours
	Basics of surveying	03
I	Introduction to surveying- concept of plane and geodetic surveys. Principles of surveying; Errors in measurements. Surveying instruments, Types of Maps, scale and uses, plotting accuracy coordinate systems	
	Linear measurements	03
II	Direct and indirect methods; Chain and tape measurements-corrections.	
	Measurement of directions	05
III	Bearings and angles; Compass surveying-magnetic bearings, declination, local attraction errors and adjustments; Theodolite- different types, uses, methods of observation and booking of data.	
	Plane Table Surveying:	05
IV	Equipment's, principles, operation, methods, errors, advantages and disadvantages.	
	Levelling and contours	05
V	Methods of height determination, profile levelling and cross sectioning, Contours - their characteristics, uses and methods of contouring.	
VI	Curve survey	04
	Setting out of simple circular, compound, reverse, transition and vertical curves	
VII	Traversing and Triangulation Surveying	05
	Compass and theodolite traverses; Triangulation systems, Intervisibility, Signals, satellite stations, computations and adjustments.	
VIII	Photogrammetry	06
	Aerial Photographs- Basic terms & Definitions, scales, relief displacements, Flight Planning, Stereoscopy, Characteristics of photographic images, Fundamentals of aerial photo-interpretation.	
IX	Modern Surveying Equipment	03
	Introduction to total station.	
X	Global Positioning System (GPS)	03
	Introduction, GPS principles, Satellite navigation System, GPS - Space segment, Control segment, User segment, and GPS satellite signals, Receivers, Static, Kinematic and Differential GPS.	
XI	Remote Sensing:	03
	Principles, EME, sensors and platforms of remote sensing, its application and scope.	

Essential Readings:

1. Punmia, B.C. "Surveying Vol.I and II, Standard Publishers", Second edition, 1994.
2. Duggal, S.K. "Surveying Vol. I and II, Tata McGraw Hill", Fourth edition, 2004.
3. W. Schofield and M. Breach, "Engineering Surveying", 6th edition, CRC Press, 2007.

Supplementary Readings:

1. Satheesh Gopi. "Advanced Surveying, Pearson Education", second edition, 2007.
2. Satheesh Gopi. "The Global Positioning System and Surveying using GPS, Tata McGraw", second edition, 2005.
3. Basak NN. "Surveying & Levelling, McGraw Hill, second edition, 2014