

23CE3301: SURVEYING SYLLABUS

Course Code	23CE3301	Year	II	Semester	I
Course Category	Professional Core	Branch	CIVIL	Course Type	Theory
Credits	3	L-T-P	3-0-0	Prerequisites	Calculus & Linear Algebra; Applied Physics
Continuous Internal Evaluation	30	Semester End Evaluation:	70	Total Marks:	100

Course Objectives:

The objective of this course is to:

1. Know the principle and methods of surveying and measuring of horizontal and vertical-distances and angles
2. Identification of source of errors and rectification methods
3. Know surveying principles to determine areas and volumes
4. Setting out curves and use modern surveying equipments for accurate results
5. Know the basics of Photogrammetry Surveying

Course Outcomes:

Course will enable the student to:

CO	Statement	Blooms level
CO 1	Apply the principle and methods of surveying and measuring of horizontal and vertical- distances and angles	L2
CO 2	Identify the source of errors and rectification methods	L3
CO 3	Apply surveying principles to determine areas and volumes	L2
CO 4	Setting out curves and using modern surveying equipment	L3
CO 5	Apply the basics of Photogrammetry Surveying in field	L4

Course Articulation Matrix:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	3	3	-	2	1	3	-	3	3	3	-	1	1	1
CO2	3	2	-	2	2	2	-	2	2	2	-	2	2	1
CO3	3	1	-	1	1	1	-	1	2	2	-	2	3	1
CO4	3	3	-	3	3	1	-	1	1	1	-	2	1	2
CO5	3	1	-	3	3	1	-	1	1	1	-	2	3	2

Syllabus:

Unit No	Content	Mapped COs
I	<p>Introduction and Basic Concepts: Introduction, Objectives, classification and principles of surveying, Surveying accessories. Introduction to Compass, leveling and Plane table surveying.</p> <p>Linear distances- Approximate methods, Direct Methods- Chains- Tapes, ranging, Tape corrections.</p> <p>Prismatic Compass- Bearings, included angles, Local Attraction, Magnetic Declination, and dip –systems and W.C.B and Q.B systems of locating bearings.</p>	CO1, CO2
II	<p>Leveling- Types of levels, methods of levelling, and Determination of levels, Effect of Curvature of Earth and Refraction.</p> <p>Contouring- Characteristics and uses of Contours, methods of contour surveying.</p> <p>Areas - Determination of areas consisting of irregular boundary and regular boundary.</p> <p>Volumes -Determination of volume of earth work in cutting and embankments for level section, capacity of reservoirs.</p>	CO1, CO2, CO3
III	<p>Theodolite Surveying: Types of Theodolites, temporary adjustments, measurement of horizontal angle by repetition method and reiteration method, measurement of vertical Angle, Trigonometrical leveling when base is accessible and inaccessible.</p> <p>Traversing: Methods of traversing, traverse computations and adjustments, Introduction to Omitted measurements.</p>	CO1, CO2
IV	<p>Curves: Types of curves and their necessity, elements of simple, compound, reverse curves.</p> <p>Introduction to Tacheometric Surveying.</p> <p>Modern Surveying Methods: Principle and types of E.D.M. Instruments, Total station- advantages and Applications. Introduction to Global Positioning System. Introduction to Drone survey and LiDAR Survey (Light Detection And Ranging).</p>	CO4
V	<p>Photogrammetry Surveying:</p> <p>Introduction, Basic concepts, perspective geometry of aerial photograph, relief and tilt displacements, terrestrial photogrammetry, flight planning; Stereoscopy, ground control extension for photographic mapping- aerial triangulation, radial triangulation, methods; photographic mapping- mapping using paper prints, mapping using stereo-plotting instruments, mosaics, map substitutes.</p>	CO5

Learning Resource(s)
Text Book(s)
<ol style="list-style-type: none">1. Surveying (Vol – 1 & 2) by Duggal S K, Tata McGraw Hill Publishing Co. Ltd. New Delhi, 5th edition, 2019.2. Textbook of Surveying by <i>C Venkatramaiah, Universities Press 1st Edition, 2011.</i>
Reference Book(s)
<ol style="list-style-type: none">1. Surveying (Vol – 1), by B. C. Punmia, Ashok Kumar Jain and Arun Kumar Jain - Laxmi Publications (P) ltd., New Delhi, 18th edition 2024.2. Surveying (Vol – 2), by B. C. Punmia, Ashok Kumar Jain and Arun Kumar Jain - Laxmi Publications (P) ltd., New Delhi 17th 2022.3. Surveying (Vol – 3), by B. C. Punmia, Ashok Kumar Jain and Arun Kumar Jain - Laxmi Publications (P) ltd., New Delhi 16th 2023.4. Plane Surveying and Higher Surveying by Chandra A M, New age International Pvt. Ltd.,Publishers, New Delhi, 3rd Edition, 2015.5. Surveying and Levelling by N.Basak Tata McGraw Hill Publishing Co. Ltd. New Delhi, 4th edition, 2014.6. Surveying (Vol 1, 2 & 3), by Arora K R, Standard Book House, Delhi. Edition: 12th, 2015.
e- Resources & other digital material
https://koha.srmap.edu.in/cgi-bin/koha/opac-detail.pl?biblionumber=11522&shelfbrowse_itemnumber=23066