

Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
CE-303	Surveying-I	PCC	5	4	1	0	50	100	150

Course Outcomes:

At the end of the course the student will be able to:	
CO1	Carry out surveying in the field for various Civil Engineering projects.
CO2	Understand traverse surveying and its adjustments by various methods.
CO3	Measure accurately using different surveying instruments.
CO4	Prepare a contour plan and map of the area.
CO5	Perform theodolite survey for horizontal and vertical heights.

Detailed Syllabus**Section –A**

UNIT 1: Chain survey: Classification of surveys, reconnaissance, principles-provision of control, conventional signs. Chain survey: instruments, principles of chain survey, field book, plotting - tie line and check line, chaining and ranging obstacles. Chaining on sloping ground, errors, uses of cross staff and optical square.

(6 Hrs)

UNIT 2: Levelling and contouring: Definition of terms used in levelling, types of levels and staff, temporary adjustment of levels, principles of levelling, reduction of levels, booking of staff readings, examples. Definition, representation of reliefs, horizontal equivalent, contour interval, characteristics of contours, methods of contouring, contour gradient, uses of contours maps.

(8 Hrs)

UNIT 3: Compass and plane table: Prismatic compass, surveyor's compass, whole circle, reduced bearing-true and magnetic bearing dip. Declination, local attraction, traversing, plotting, error of closure, graphical and analytical adjustments Plane table, methods of plane table surveying, radiation, intersection, traversing and resection, two point and three point problems.

(8 Hrs)**Section B**

Unit 4: Trigonometric levelling: Definition of level surfaces, mean sea level, reduced level, bench marks, levelling instruments, temporary and permanent adjustments, fly levelling, booking, reduction of levels, corrections for refraction and curvature, reciprocal levelling, longitudinal levelling. Computation of volume by trapezoidal and prismoidal formula, volume from spot levels, volume from contour plan, trigonometric levelling considering refraction and curvature correction, axis signal correction.

(8 Hrs)

UNIT 5: Theodolite surveying :Various parts, axis of transit, technical terms, temporary adjustments. Measurement of horizontal and vertical angles, method of repetition and reiteration; theodolite traverse - different methods of running theodolite traverses, gales' traverse table, balancing of traverse by bow-ditch's transit and modified transit rules; problems on one-plane and two-plane methods, omitted measurements, errors in theodolite survey.

(8 Hrs)**Text Books**

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Surveying Vol.I& II	S.K.Duggal	Tata McGraw Hill	13 th (2020)
2	Advanced Surveying:	Madhu, N, Sathikumar, R and Satheesh Gobi	Pearson India	2 nd (2006)
3	Geomatics Engineering	Manoj, K. Arora and Badjatia	Nem Chand & Bros	1 st (2011)

Reference Books

S. No.	Name of the Books	Author	Publisher	Edition (Pub. Yr.)
1	Surveying and Levelling Vol. I and II	Bhavikatti, S.S.	I.K. International	1 st (2014)
2	Remote sensing and Geographical information system	Anji Reddy, M.	B.S. Publications	1 st (2012)