SURVEYING AND GEOMATICS LABORATORY

III Semester: CE

Course Code	Category	Hours/Week			Credits	Maximum Marks		
		L	T	P	C	CIA	SEE	Total
ACEC05	Core	0	0	3	1.5	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes:36				Total Classes:36		

Prerequisite: No Prerequisites required

I. COURSE OVERVIEW:

The Surveying Laboratory is equipped with the instruments and tools that students use throughout the surveying course. Students learn techniques for gathering field data with both traditional and modern instruments. A set of instruments are used such as surveying chains, tapes, auto level, dumpy levels, theodolite, ranging rods, tripods, pegs, plane tables and other common surveying tools and ancillary equipment's.

II. COURSE OBJECTIVES

The Students will try to learn:

1. The practical knowledge on calculation of an area, volume of an irregular and regular land surface using chains and tapes.
2. The different types of instruments in surveying. Perform levelling and contouring of ground surfaces.
3. Mathematics in surveying field to calculate areas and volumes for different projects.
4. Survey data and design the civil engineering projects.

III. COURSE OUTCOMES:

After successful completion of the course, students should be able to:

CO 1	**Utilize** the concept of bearing system to measure azimuth and surveylines in filed. .	Apply
CO 2	**Make use of** digital theodolite apparatus to measure vertical and horizontal distances, gradients and elevations.	Apply
CO 3	**Demonstrate** the two point and three point problem in plane table surveying for tracing out the centering point or station point.	Understand
CO 4	**Identify** the reduced levels using leveling apparatus for illustrating longitudinal section and cross section and plotting.	Apply
CO 5	**Make use of** Rankine's curve setting procedure for investigating the suitable path along the alignment and conflict points.	Apply
CO 6	**Distinguish** between Tacheometry and trigonometry surveying for various operating conditions data record keeping.	Analyze

IV. COURSE SYLLABUS

Week- l:INTRODUCTION TO SURVEYING LABORATORY -I

Introduction to surveying laboratory. Do's and Don'ts in surveying lab

Week- 2: SURVEY OF AN AREA BY CHAIN SURVEY (CLOSED TRAVERSE) AND PLOTTING.

Measurement of an area by chain survey

Week-3: CHAINING ACROSS OBSTACLES

Chaining across obstacles

Week-4: DETERMINATION OF DISTANCE BETWEEN TWO INACCESSIBLE POINTS WITH COMPASS

Calculation of distance between two points with compass survey.

Week-5: SURVEYING OF AGIVENAREA BYPRISMATICCOMPASS(CLOSEDTRAVERSE) AND PLOTTING AFTER ADJUSTMENT

Surveying of a given area by prismatic compass

Week-6: CORRECTION FOR LOCAL ATTRACTION BY PRISMATIC COMPASS

Corrections for local attraction by prismatic compass

Week-7: RADIATION METHOD, INTERSECTION METHODS BY PLANE TABLE SURVEY
Radiation method and intersection methods by plane table survey.

Week-8: TWO POINT PROBLEMS IN PLANE TABLE SURVEY
Two point problems in plane table survey.

Week-9: THREE POINT PROBLEMS IN PLANE TABLE SURVEY
Three-point problems in plane table survey.

Week-10: TRAVERSING BY PLANE TABLE SURVEY
Traversing by plane table survey.

Week-11: FLY LEVELING (DIFFERENTIAL LEVELING)
Fly leveling

Week-12: AN EXERCISE OF LONGITUDINAL SECTION AND CROSS SECTION ANDPLOTTING
An exercise of longitudinal section and cross section and plotting.

Week-13: TWO EXERCISES ON CONTOURING
Exercises on contouring.

V. REFERENCE BOOKS

1. H. S. Moondra, Rajiv Gupta, "Laboratory Manual for Civil Engineering", CBS Publishers Pvt .Ltd., New Delhi, 2nd Edition, 2013.
2. James M. Anderson, Edward M. Mikhail, "Surveying: Theory and Practice", Tata McGraw Hill Education, 2012.
3. S. S. Bhavikatti, "Surveying Theory and Practice", IK Books, New Delhi, 2010.