



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal - 500 043, Hyderabad, Telangana

COURSE CONTENT

ENGINEERING SURVEYING LABORATORY								
III Semester: CE								
Course Code	Category	Hours/Week			Credits	Maximum Marks		
ACED04	Core	L	T	P	C	CIA	SEE	Total
		0	0	2	1	40	60	100
Contact Classes: NIL	Tutorial Classes: NIL	Practical Classes: 45			Total Classes: 45			
Prerequisite: Linear Algebra and Calculus								

I. COURSE OVERVIEW:

The purpose of this laboratory is to draw plans of individual site, industry, as well as the maps of town, city, district and India, and also to execute the all constructions. The Surveying and Geomatics Laboratory is equipped with the instruments and tools students use throughout the surveying course. Students learn techniques for gathering field data with both traditional and modern instruments. A set of traditional and modern instruments are used, including auto level, theodolite, total station, level rods, tripods, tape measures, chaining pins, and other common surveying tools and ancillary equipment.

II. COURSE OBJECTIVES:

The students will try to learn:

- I. The practical knowledge on computation of an area, volume of an irregular and regular land surface using chains and tapes.
- II. Different types of instruments in surveying. Perform levelling and contouring of ground surfaces.
- III. Mathematics in surveying field to calculate areas and volumes for different projects.
- IV. Survey data and design the civil engineering projects.

III. COURSE OUTCOMES:

At the end of the course students should be able to:

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

IV. COURSE CONTENT:

Week- 1: 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 A GIVEN AREA BY PRISMATIC COMPASS (CLOSED TRAVERSE) 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 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 AND PLOTTING

An exercise of longitudinal section and cross section and plotting.

Week-13: INTERSECTION METHOD BY PLANE TABLE SURVEY

Intersection method by plane table survey.

Week-14: TWO EXERCISES ON CONTOURING

Exercises on contouring.

V. TEXT BOOKS:

1. H. S. Moondra, Rajiv Gupta, “*Laboratory Manual for Civil Engineering*”, CBS Publishers Pvt.Ltd., New Delhi, 2nd Edition, 2013.
2. S. S. Bhavikatti, “*Surveying Theory and Practice*”, IK Books, New Delhi, 2010.

VI. REFERENCE BOOKS:

1. James M. Anderson, Edward M. Mikhail, “*Surveying: Theory and Practice*”, Tata Mc Graw Hill Education, 2012.

VII. ELECTRONICS RESOURCES:

1. <https://www.iare.ac.in/sites/default/files/lab1/Surveying>
2. <https://aust.edu/lab-manuals/CE/ce-104.pdf>

VIII. MATERIAL ONLINE:

1. Course Template
2. Laboratory manual