SURVEYING AND GEOMATICS LABORATORY

III Semester: CE								
Course Code	**Category**	\multicolumn{3}{c}{**Hours / Week**}	**Credits**	\multicolumn{3}{c}{**Maximum Marks**}
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
ACEB03	**Core**	3	-	-	3	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	\multicolumn{4}{c}{**Practical Classes: 36**}			\multicolumn{2}{c}{**Total Classes: 36**}

COURSE OBJECTIVES:

The course should enable the students to:

I. Gain the practical knowledge on calculation of an area, volume of an irregular and regular land surface using chains and tapes.
II. Operate different types of instruments in surveying. Perform leveling and contouring of ground surfaces.
III. Apply knowledge of mathematics in surveying field to calculate areas and volumes for different projects
   Utilize total station and other modern survey instruments.

COURSE LEARNING OUTCOMES (CLOs):

1. Measurement of an area by chain survey Obtain the direction of a surveying line with a prismatic and surveyors compass
2. Chaining across obstacles.
3. Calculation of distance between two points with compass survey.
4. Corrections for local attraction by prismatic compass.
5. Radiation method and intersection methods by plane table survey.
6. An exercise of longitudinal section and cross section and plotting.
7. Measurement of horizontal angles.
8. Trigonometric leveling- heights and distance problems.
9. Heights and distances using principles of tacheometric survey.
10. Curve setting: different methods.
11. Determination of an area using total station.
12. Determination of remote height using total station.
13. Calculating distance, gradient and different heights between two inaccessible points using total station.

Week-1	**SURVEY OF AN AREA BY CHAIN SURVEY (CLOSED TRAVERSE) AND PLOTTING**
Batch I: Measurement of an area by chain survey
Batch II: Measurement of an area by chain survey
Week-2	**CHAINING ACROSS OBSTACLES**
Batch I: Chaining across obstacles
Batch II: Chaining across obstacles
Week-3	**DETERMINATION OF DISTANCE BETWEEN TWO INACCESSIBLE POINTS WITH COMPASS**
Batch I: Calculation of distance between two points with compass survey.
Batch II: Calculation of distance between two points with compass survey.

Week-4	**CORRECTION FOR LOCAL ATTRACTION BY PRISMATIC COMPASS**

Batch I: Corrections for local attraction by prismatic compass.
Batch II: Corrections for local attraction by prismatic compass

Week-5	**RADIATION METHOD, INTERSECTION METHODS BY PLANE TABLE SURVEY**

Batch I: Radiation method and intersection methods by plane table survey.
Batch II: Radiation method and intersection methods by plane table survey

Week-6	**AN EXERCISE OF LONGITUDINAL SECTION AND CROSS SECTION AND PLOTTING**

Batch I: An exercise of longitudinal section and cross section and plotting.
Batch II: An exercise of longitudinal section and cross section and plotting.

Week-7	**MEASUREMENT OF HORIZONTAL ANGLES BY METHOD OF REPETITION AND REITERATION**

Batch I: Measurement of horizontal angles
Batch II: Measurement of horizontal angles

Week-8	**TRIGONOMETRIC LEVELING- HEIGHTS AND DISTANCE PROBLEMS**

Batch I: Trigonometric leveling- heights and distance problems
Batch II: Trigonometric leveling- heights and distance problems

Week-9	**HEIGHTS AND DISTANCES USING PRINCIPLES OF TACHEOMETRIC SURVEY**

Batch I: Heights and distances using principles of tacheometric survey.
Batch II: Heights and distances using principles of tacheometric survey

Week-10	**CURVE SETTING –DIFFERENT METHODS**

Batch I: Curve setting: different methods.
Batch II: Curve setting: different methods

WeeK-11	**DETERMINATION OF AN AREA USING TOTAL STATION**

Batch I: Determination of an area using total station.
Batch II: Determination of an area using total station.

Week-12	**DETERMINATION OF REMOTE HEIGHT USING TOTAL STATION**

Batch I: Determination of remote height using total station.
Batch II: Determination of remote height using total station

Week-13	**CALCULATING DISTANCE, GRADIENT AND DIFFERENT HEIGHTS BETWEEN TWO INACCESSIBLE POINTS USING TOTAL STATION**

Batch I: Calculating distance, gradient and different heights between two inaccessible points using total station.
Batch II: Calculating distance, gradient and different heights between two inaccessible points using total station.

Manuals:

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 Mc Graw Hill Education, 2012.
3. S. S. Bhavikatti, "Surveying Theory and Practice", IK Books, New Delhi, 2010.

Web References:

1. https://nptel.ac.in/courses/105104100/43
2. https://www.coloradomesa.edu/wccc/programs/land-surveying-geomatics.html.
3. https://books.google.co.in/books?id=FaCgAAQBAJ&printsec=frontcover&dq=surveying+and+geomatics+ONLINE+text+books&hl=en&sa=X&ved=0ahUKEwi1wP3x24HgAhUJ5o8KHS2EDzkQ6AEIMzAB# v=onepage&q&f=false

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