

SURVEYING AND GEOMATICS LABORATORY

III Semester: CE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
ACEB03	Core	L	T	P	C	CIA	SEE	Total
		-	-	3	1.5	30	70	100
Contact Classes: Nil	Tutorial Classes: Nil	Practical Classes: 36			Total Classes: 36			
I. COURSE OVERVIEW: Surveying and Geomatics Laboratory is the application of technology and scientific principles for tracing, design, operation and management of facilities. Surveying refers to tracing points on ground or field. This course gives an overview on surveying with respect to tracing of points locating inaccessible points, curve and path, contours etc., This course also focuses on advanced surveying techniques, including EDM, photo grammar and Remote sensing. Further the course is useful to solve the complex problems related to the inaccessible distances, remote elevation and remote distances by collecting and evaluating the data such as horizontal distances, vertical distances, slopes and elevations.								
II. OBJECTIVES: The course should enable the students to: <ul style="list-style-type: none"> I The types of surveys, methods and technology involved in measuring field parameters using traditional and modern instruments. II The operating principles of various leveling instruments and analyze their performance characteristics under various terrains. III The measurement of alteration works, detecting land use and land cover, creating base maps for visual reference. 								
III. COURSE OUTCOMES: After successful completion of the course, students should be able to: <ul style="list-style-type: none"> CO 1 Utilize the concept of traversing to measure irregular boundaries and survey lines in field. Apply CO 2 Make use of prismatic compass to measure bearings, dip, declination and local attractions. 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 method for investigating the suitable path along the alignment and conflict points. Apply CO 6 Distinguish elevation and remote distance in total station at various operating conditions and data record keeping. Analyze 								
IV. SYLLABUS:								
LIST OF EXPERIMENTS								
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:	
<ol style="list-style-type: none"> 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. 	