

SURVEYING

III Semester: CE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
ACE002	Core	L	T	P	C	CIA	SEE	Total
		3	1	-	4	30	70	100
Contact Classes: 45		Tutorial Classes: 15		Practical Classes: Nil			Total Classes: 60	
<p>OBJECTIVES:</p> <p>The course should enable the students to:</p> <ol style="list-style-type: none"> I. Evaluate the basic principles of surveying and its classification. II. Identify, formulate and solve the problems in the field of advanced surveying. III. Determine the contour points and their importance in surveying. IV. Analyze survey data and design the civil engineering projects. <p>COURSE LEARNING OUTCOMES (CLOs):</p> <ol style="list-style-type: none"> 1. Analyze the sources of errors in linear measurements. 2. Evaluate the corrections for true length, true area and true volumes of calculated data. 3. Determine the errors in chain and tape length. 4. Obtain directions of a surveying line with a prismatic compass. 5. Determine the bearing angles by a prismatic compass. 6. Draw a traverse and calculate area enclosed within the traverse. 7. Measure the corrected bearing angles without local attraction. 8. Differentiate the whole circle and quadrant bearing systems. 9. Draw cross section and prepare a contour maps for road works, rail works, canals etc., 10. Predict Reduced Levels with reference to a common assumed datum. 11. Sketch the profile the of land from the reduced levels. 12. Differentiate the basic concepts in leveling such as datum and bench mark etc., 13. Calculate the volume of earth work, the sectional areas of the cross- section. 14. Compute an area of filed which is surrounded by irregular boundaries. 15. Calculate an area by latitudes and departures of a closed traverse. 16. Explain the importance of theodolite and the principle of measuring angles in horizontal and vertical planes. 17. Understand the components of theodolite and errors in elimination of parallax. 18. Calculate the error of closure in a closed traverse. 19. Differentiate the advantages of global positioning system and geographical information. 20. Analyze the basic principle of total station in recording the field data. 21. Derive an equation for calculation of heights and distances using principles of tacheometry survey. 22. Derive an equation for calculation of heights and distances using principles of triangulation survey. 23. Advanced Surveying: Basic principles of total station, global positioning system and geographic information system. 								
Unit-I	INTRODUCTION, LINEAR AND ANGULAR MEASUREMENTS						Classes: 09	
<p>Definitions, primary divisions of surveying, objectives, principles and classifications, plan and map, errors due to wrong scale. Linear and angular measurements; Direct and in direct methods, use of chain and tape, errors in chaining, meridians, azimuths and bearings, declination, dip, computation of angle, errors due to local attraction</p>								

Unit-II	LEVELING AND CONTOURING	Classes: 09
<p>Leveling: Concept and terminology, temporary and permanent adjustments, method of leveling, height of instrument and rise and fall method; Contouring: Characteristics and uses of contours; Methods of conducting contour surveys and their plotting</p>		
Unit-III	COMPUTATION OF AREAS AND VOLUMES:	Classes: 09
<p>Computation of areas directly from field measurements methods, computation of areas along irregular boundaries and regular boundaries.</p> <p>Embankments and cutting for a level section and two level sections with and without transverse slopes, determination of the capacity of reservoir, volume of barrow pits</p>		
Unit-IV	THEODOLITE AND TRAVERSE SURVEYING	Classes: 09
<p>Theodolite, description of transit theodolite, definitions and terms, temporary and permanent adjustments, measurement of horizontal and vertical angles. Trigonometric leveling height and distance problems, traverse survey and methods of traversing, closing errors in traversing</p>		
Unit-V	TACHEOMETRIC AND ADVANCED SURVEYING	Classes: 09
<p>Tachometry: Stadia and tangential methods of tachometry. Distance elevation and depression formulae for staff held in vertical and inclined position. Curves: Definition, types of curves, design and setting out, simple and compound curves. Advanced Surveying: Basic principles of total station, global positioning system and geographic information system</p>		
Text Books:		
<p>1. Dr. K. R. Arora, "Surveying Volume-1", Standard book house, New Delhi, 13th Edition, 2012. 2S. K. Duggal, "Surveying Volume-2", Tata McGraw-Hill Education Private Limited, India, New Delhi, 3rd Edition, 2009.</p>		
Reference Books:		
<p>1. R. Subramanian, "Surveying and Leveling", Oxford University Press, New Delhi. 2nd Edition, 2012. 2. M. James, Anderson Edward Mikhail, "Surveying Theory and Practice", Tata McGraw Hill, New Delhi, 7th Edition, 2000. 3. Arthur R Benton, Philip J Taety, "Elements of Plane Surveying", McGraw-Hill Education, New Delhi. 8th Edition, 2000</p>		
Web References:		
<p>1. www.nptel.ac.in/courses/105107122/home.htm</p>		