

## 20CE3302 - SURVEYING

<b>Offering Branches</b>	CE		
Course Category:	Professional Core	Credits:	3
Course Type:	Theory	Lecture-Tutorial- Practical:	3-0-0
Prerequisites:	20BS1101- Calculus and Linear Algebra 20BS1104-Applied Physics	Continuous Evaluation:	30
		Semester End Evaluation:	70
		Total Marks:	100

### Course Outcomes

Upon successful completion of the course, the student will be able to:

<b>CO1</b>	Measure the land area by chaining, compass and plane table.	K3
<b>CO2</b>	Measure the elevation of points using dumpy level and illustrate various methods of contouring	K3 K4
<b>CO3</b>	Measure the height and distance by theodolite and know about the application of tacheometric surveying (L3)	K3
<b>CO4</b>	Illustrate the various methods of curve setting in the field and evaluate areas, volumes (L4)	K4
<b>CO5</b>	Know the Principles of triangulation survey and precisely measure horizontal/vertical distances using advanced instrument	K3

### Contribution of Course Outcomes towards achievement of Program Outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
<b>CO1</b>	2	2	2	2	2	2		2	2	2		2	2	2
<b>CO2</b>	2	2	2	2	2	3		3	3	3		3	2	3
<b>CO3</b>	3	3	3	3	3	2		2	2	2		2	3	2
<b>CO4</b>	2	2	2	2	2	3		3	3	3		3	2	3
<b>CO5</b>	2	2	2	2	2	2		2	2	2		2	2	2
<b>Avg.</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>2</b>	<b>2</b>		<b>2</b>	<b>2</b>	<b>2</b>

1- Low

2-Medium

3-High

### Course Content

<b>UNIT-1</b>	<p><b>Chain Surveying:</b> Surveying objectives, linear measurements, instruments for surveying, preparation of map and plan, measurement of distance, chain surveying principles, offsets, chain surveying instruments, traverses with a chain, problems on obstacles of chain surveying.</p> <p><b>Compass Surveying:</b> Types of compass, meridians and bearings, local attraction, magnetic declination, measurement of directions and angles traversing with a compass, plotting of traverse, adjustment of closing error.</p>	<b>CO1</b>
<b>UNIT-2</b>	<p><b>Plane Table Surveying:</b> Principle and instruments used in plane table surveying, working operations, methods of plane table surveying.</p> <p><b>Levelling and Contouring:</b> Instruments for levelling, principle and classification of levelling, bench marks, height (level) computations, longitudinal and cross-sectional levelling, problems on levelling. Contours, characteristics of contours, contours of natural features, methods of contouring.</p>	<b>CO1, CO2</b>
<b>UNIT-3</b>	<p><b>Theodolite Surveying:</b> Theodolite component parts, classification, theodolite observations, principle of theodolite survey, traverse computations, practical problems.</p> <p><b>Tacheometric Surveying:</b> Principle of tacheometry, methods of tacheometry, tacheometry as applied to subtense measurement, field work for tacheometric surveying, errors.</p>	<b>CO3</b>
<b>UNIT-4</b>	<p><b>Curve Setting:</b> Types of curves, elements of a curve, setting out a simple curve, setting out a compound curve, reverse curve, transition curves.</p> <p><b>Construction Surveys:</b> Setting out of buildings, computation of areas, earthwork measurements: LS&amp;CS,</p>	<b>CO4</b>

	computation of volumes.	
<b>UNIT-5</b>	<p><b>Triangulation Surveying:</b> Base of the object accessible, base of an inclined object accessible, reduced level of the elevated points with inaccessible bases, instrument axes at different levels, principle of triangulation, purpose and classification of triangulation surveys, layout of triangulation.</p> <p><b>Total Station &amp; GIS:</b> EDM instruments, Total Station, Global Positioning System, GIS</p>	<b>CO5</b>
<b>Learning Resources</b>		
<b>Text Books</b>	<ol style="list-style-type: none"> <li>1. B.C. Punmia, A.K. Jain, Arun Jain, Surveying I and II, 16/e, Lakshmi Publications, 2017.</li> <li>2. R. Subramanian, Surveying and Levelling, 2/e, Oxford University Press, 2014.</li> </ol> <p>D.G Charles, R.W. Paul, Elementary Surveying: An Introduction to Geomatics, 15/e, Prentice Hall, 2018</p>	
<b>Reference Books</b>	<ol style="list-style-type: none"> <li>1. S.K. Roy, Fundamentals of Surveying, 2/e, Prentice Hall of India, 2011.</li> <li>2. T.P. Kanetkar, Surveying and Levelling, Part I and II, 4/e, New Central Book Agency 2012.</li> </ol>	
<b>e-Resources &amp; other digital material</b>	<ol style="list-style-type: none"> <li>1. <a href="https://nptel.ac.in/courses/105107122/">https://nptel.ac.in/courses/105107122/</a></li> <li>2. <a href="http://jntuk-coerd.in/">http://jntuk-coerd.in/</a></li> </ol>	