

## SCHEME OF COURSE WORK

### Course Details:

<b>Course Title</b>	<b>: Advanced Surveying (Professional Elective-I)</b>		
<b>Course Code</b>	<b>: 20CE1150</b>	<b>L T P C</b>	<b>: 3 0 0 3</b>
<b>2</b>	<b>: B. Tech.</b>		
<b>Branch:</b>	<b>: Civil Engineering</b>		
<b>Semester</b>	<b>: IV</b>		
<b>Prerequisites</b>	<b>: Surveying, Physics, Mathematics</b>		
<b>Courses to which it is a prerequisite</b>	<b>: Remote sensing and GIS</b>		

### Course Outcomes (COs):

At the end of the course, the student will be able to:

1	Prepare different types of horizontal curves as simple and Compound curves.
2	Preparation of Reverse and Transition curves.
3	Study applications and importance of Total station.
4	Study Photogrammetric surveying.
5	Apply the importance of GIS and Mapping.

### Program Outcomes (POs):

Graduates will be able to:

1	Apply the knowledge of mathematics, science, engineering fundamentals to solve complex civil engineering problems.
2	Attain the capability to identify, formulate and analyse problems related to civil engineering and substantiate the conclusions.
3	Design solutions for civil engineering problems and design system components and processes that meet the specified needs with appropriate consideration to public health and safety.
4	Perform analysis and interpretation of data by using research methods such as design of experiments to synthesize the information and to provide valid conclusions.
5	Select and apply appropriate techniques from the available resources and modern civil engineering and software tools, and will be able to predict and model complex engineering activities with an understanding of the practical limitations.
6	Carry out their professional practice in civil engineering by appropriately considering and weighing the issues related to society and culture and the consequent responsibilities.
7	Understand the impact of the professional engineering solutions on environmental safety and legal issues.
8	Transform into responsible citizens by resorting to professional ethics and norms of the engineering practice.
9	Function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams.
10	Communicate fluently on complex engineering activities with the engineering community and society, and will be able to prepare reports and make presentations effectively.
11	To demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.
12	Engage them in independent and life-long learning in the broadest context of technological change while continuing professional practice in their specialized areas of civil engineering.

### Program Specific outcomes:

1.	Collect, process and analyse the data from topographic surveys, remote sensing, hydrogeological investigations, geotechnical explorations, and integrate the data for planning of civil engineering infrastructure.
2.	Analyse and design of substructures and superstructure for buildings, bridges, irrigation structures and pavements.
3.	Estimate, cost evaluation, execution and management of civil engineering projects.

### Course Outcome versus Program Outcomes:

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO-1	3	3	2	3	3	2	3	-	2	2	-	2	3	1	2
CO-2	3	3	2	3	3	2	3	-	2	2	-	2	3	1	2
CO-3	3	3	2	3	3	2	3	-	2	2	-	2	3	1	-
CO-4	3	3	2	3	3	2	3	-	2	2	-	2	3	1	-
CO-5	3	3	2	3	3	2	3	-	2	2	-	2	3	1	-

3 - Strongly correlated, 2 - Moderately correlated, 1-Low Correlation, Blank - No correlation

<b>Assessment Methods:</b>	Assignment / Seminar /Mid-Test / End Exam
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### Teaching-Learning and Evaluation

Week No.	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Simple curves – Elements of simple curves- Methods of setting out simple curves	CO-1	Define Curve? Explain the various elements of simple curve?	<ul style="list-style-type: none"> <li>□ Lecture</li> <li>□ Discussion</li> <li>□ Problem solving</li> </ul>	
2	Rankine's method – Two theodolite method	CO-1	Briefly explain the Rankine's method and two theodolite method?	<ul style="list-style-type: none"> <li>□ Lecture</li> <li>□ Discussion</li> <li>□ Problem solving</li> </ul>	Assignment
3	Compound curves- Elements of compound curves	CO-1	Explain compound curves and elements of the compound curves	<ul style="list-style-type: none"> <li>□ Lecture</li> <li>□ Problem solving</li> </ul>	
4	Reverse curves – Elements of reverse curve	CO-2	What is reverse curve and explain the various elements of reverse curve.	<ul style="list-style-type: none"> <li>□ Lecture</li> <li>□ Problem solving</li> </ul>	Assignment
5	Various elements of a Transition curves	CO-2	1. Determine the length of the transition curve	<ul style="list-style-type: none"> <li>□ Lecture</li> <li>□ Problem solving</li> </ul>	
6	Setting out methods of transition curve	CO-2	Explain the setting out methods of transition curve	<ul style="list-style-type: none"> <li>□ Lecture</li> <li>□ Problem solving</li> </ul>	Assignment
7	Introduction to Total station, components used in Total Station surveying	CO-3	1.What are the components of total station	<ul style="list-style-type: none"> <li>□ Lecture</li> </ul>	
8	MID TEST-I				
9	Brief Description of important operations, Applications of Total station, Advantages and Disadvantages.	CO-3	Give the brief description of important operations in total station	<ul style="list-style-type: none"> <li>□ Lecture</li> <li>□ Discussion</li> </ul>	

10	Introduction to photogrammetric surveying Basic principles, The photo theodolite, Definitions, Horizontal and Vertical angles from terrestrial photograph	CO-4	1.Determine the Horizontal and Vertical angles from terrestrial photograph	▫ Lecture	Assignment
11	Horizontal position of a point from photographic measurement, Elevation of a point by photographic measurement, Determination of focal length of the lens, Aerial camera, Scale of a vertical photograph, Scale of a tilted photograph,	CO-4	Determine the Horizontal position of a point from photographic measurement  Derive the Scale of a vertical photograph	▫ Lecture ▫ Discussion	Assignment
12	Flight planning for aerial photography, The ground control for photogrammetric, Aerial and close range photogrammetric.	CO-4	Explain briefly about ground control for photogrammetry.	▫ Lecture	
13	Introduction to Geographic Information System (GIS), The four M'S, Contributing Disciplines for GIS, Objectives, components,	CO-5	Define GIS. What are the 4 M's in GIS?  What are the objectives and components of GIS	▫ Lecture ▫ Discussion	
14	Data Models, Data Structures, Database Management, Errors in GIS, GIS Software packages	CO-5	Write briefly about data models in GIS	▫ Lecture	
15	Linkage of GIS to Remote sensing, Application areas of GIS and Remote sensing.	CO-5	What is the relation between Remote sensing and GIS	▫ Lecture	Assignment
16	MID TEST-II				