SCHEME OF COURSE WORK

Course Details:

Course Title	**: Surveying and Geomatics Lab**		
Course Code	**: 20CE1102**	**L T P C**	**: 0 0 3 1.5**
Program:	**: B. Tech.**		
Specialization:	**: Civil Engineering**		
Semester	**: I**		
Prerequisites	**: None**		
Courses to which it is a prerequisite	**: None**		

Course Outcomes (COs):
At the end of the course, the student will be able to:

1	Calculate the bearings of lines with a prismatic compass for open and closed traverses (L3)
2	Determine the level differences between different stations by dumpy level and prepare contour maps (L3)
3	Calculate heights and distances using trigonometric surveying (L3)
4	Demonstrate the setting of simple and compound curves (L3)
5	Demonstrate the Total Station and its operation (L3)

PROGRAMMEOUTCOMES

1. Graduates will be able to apply the knowledge of mathematics, science, engineering fundamentals to solve complex civil engineering problems.
2. Graduates will attain the capability to identify, formulate and analyse problems related to civil engineering and substantiate the conclusions
3. Graduates will be in a position to 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. Graduates will be able to 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. Graduates will be able to 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. Graduates will be able to 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. Graduates will be able to understand the impact of the professional engineering solutions on environmental safety and legal issues.
8. Graduates will transform into responsible citizens by resorting to professional ethics and norms of the engineering practice.
9. Graduates will be able to function effectively in individual capacity as well as a member in diverse teams and in multidisciplinary streams.

10. Graduates will be able to communicate fluently on complex engineering activities with the engineering community and society, and will be able to prepare reports and make presentations effectively.
11. Graduates will be able to demonstrate knowledge and understanding of the engineering and management principles and apply the same while managing projects in multidisciplinary environments.
12. Graduates will engage themselves in independent and life-long learning in the broadest context of technological change while continuing professional practice in their specialized areas of civil engineering.

PROGRAMME SPECIFIC OUTCOMES(PSOs):

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 Vs Program Outcomes:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2			1					1	2		1
CO2	2	2		2	2		2	1	2	3	2	2
CO3	2	1		1						2		
CO4	2	2	1	3	2	2	2	2	2	2	1	2
CO5	2	2		2	2				2	2	2	2

Course Outcome Vs Programme Specific Outcomes:

CO	PSO1	PSO2	PSO3
CO1	2	1	1
CO2	2	2	1
CO3	2	1	1
CO4	2	3	3
CO5	2	2	2

Mapping Levels:
1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put -: No Correlation

Assessment Methods:	Assignment / Viva / Mid-Test / End Exam

Teaching-Learning and Evaluation

Week No.	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1	Introduction to Surveying and Geomatics lab	CO-1 to CO-5		▫ Lecture	
2-9	1. Determination of distance between two inaccessible points using compass. 2. Closed Traversing by compass & graphical adjustment. 3. Measurement of elevation difference between two points using Dumpy level by Height of Instrument 4. Measurement of elevation difference between two points using Dumpy level by Rise and Fall	CO-1,CO2, CO3	1.Determination of distance between two inaccessible points using compass 2. Determination of the height of the instrument method 3. Determination of horizontal angle by repetition method	Experiment	Checking Observation note book, Record correctionand Viva, Mid Test-1

	5. Determination of Longitudinal Section and Cross sections of a given road profile. 6. Contouring of a small area by method of blocks / grids. 7. Determination of horizontal angle by repetition and reiteration method using theodolite.				
9	**MID TEST – I**				
10-14	8. Determination of a given Tower / Building height with base is accessible and inaccessible. 9. One Exercise on Curve setting 10. Determination of area using Total Station. 11. Traversing and Contouring using Total Station. 12. Feature tracking and plotting using GPS 13. Topographic Survey using GPS	CO-4,CO5	1. Determination of horizontal angle by repetition and reiteration method using theodolite. 2. Determination of area using Total Station. 3. Determination of Feature tracking and plotting using GPS	Experiment	Checking Observation note book, Record correction and Viva, Mid Test-2
15	MID TEST – II				
16	**END EXAM**				