DEPARTMENT OF CIVIL ENGINEERING
SCHEME OF COURSE WORK

Course Details:

Course Title:	**Engineering Geology Lab**
Course Code:	**20CE1104**
L T P C:	**0 0 3 1.5**
Program:	**B. Tech.**
Branch:	**Civil Engineering**
Semester:	**II**
Prerequisites:	**Physics, Chemistry**
Courses to which it is a prerequisite:	**Building Planning & Design, Structural Design**

COURSE OUTCOMES (COs):

After completion of this course the student would be able to

CO	Course Outcomes
1	Identify various minerals and their properties
2	Identify various rocks and their properties
3	Determine the strike and dip of beds
4	Show sections for the geological maps with structural deformations
5	Show outcrop of the beds for the given data and draw the sections

PROGRAMME OUTCOMES (POs)

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	3	2	2	3	2	2	2	-	-	-	-	2
CO2	3	2	2	3	2	2	2	-	-	-	-	2
CO3	3	3	1	1	1	2	1	-	-	-	-	2
CO4	3	3	1	1	1	2	1	-	-	-	-	2
CO5	3	3	1	1	1	2	1	-	-	-	-	2

Course Outcome Vs Programme Specific Outcomes:

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

Mapping Levels:
1: Slight (Low), 2: Moderate (Medium), 3: Substantial (High), put

Assessment Methods:	Day-wise assessment / Mid-Test / End Exam

Teaching-Learning and Evaluation:

Week No.	TOPIC / CONTENTS	Course Outcomes	Sample questions	TEACHING-LEARNING STRATEGY	Assessment Method & Schedule
1-2	• Identification of Minerals after observing their physical properties as Colour Streak Lustre Cleavage Fracture Hardness Structure Specific Gravity Diaphinity and Special property • Identifying the rock forming minerals as Calcite, Feldspar, Quartz, Augite, Hornblende, Olivine, Muscovite, Biotite, Garnet, Talc, Haematite, Magnetite, Galena, Graphite	CO-1	1. Define a mineral. 2. What is streak? 3. How fracture is different from cleavage? 4. What is Mohr's scale of hardness? 5. Mention the special property of Talc. 6. What are the fundamental differences in the physical properties of Feldspar and Quartz? 7. How do you differentiate Muscovite Mica from Biotite Mica? 8. Name a mineral having Reinform structure.	Observing the specimen and recording the properties	Analysing the record sheets soon after the lab session
3-4	• Identification of Rocks after observing Grain size, Mode of formation as 1. Cooling of magma 2. weathering, Transportation, Deposition & Cementation or 3. Changes occurring because of temperature pressure chemical solutions	CO-2	1. What are Concordant and Discordant bodies? 2. Name an extrusive Igneous rock. 3. Which is the toughest Igneous rock? 4. Give out the granularity, texture, minerals present and properties of Granite. 5. How Basalt is different from Dolerite? 6. What are the structures of sedimentary rocks? 7. How metamorphic rocks are formed? 8. Describe cataclastic texture. 9. How Quarzite is different from siliceous sand stone? 10. Which rock gets metamorphosed as Gneiss?	Observing the specimen and recording the properties	Analysing the record sheets soon after the lab session

5	**MID TEST – I**				
6	Thickness of Beds	CO-3	1. Given slope of ground, dip of bed and width of outcrop. Find true thickness and vertical thickness. 2. Given slope of ground, dip of bed and true thickness. Find vertical thickness and width of exposed outcrop. 3. Given slope of ground, width of exposed outcrop and true thickness. Find dip of bed and vertical thickness. 4. Given dip of bed, width of exposed outcrop and vertical thickness. Find slope of ground and the true thickness of bed. 5. Given width of outcrop, true thickness and vertical thickness. Find slope of ground and dip of bed.	Guiding students while drawing	Evaluating problems and awarding marks
7	Dip & Strike	CO-3	1. Given amount of true dip and direction of true dip, find amount of apparent dip along a given direction. 2. Given the amount of apparent dips along two given directions, find true dip and its direction. 3. Given the true dip along a known direction, find the directions along which a specific apparent dip acts.	Guiding students while drawing	Evaluating problems and awarding marks
8	Faults Different types Nomenclature as Slip, Throw, Hade, Hanging wall and Foot wall	CO-3	1. Normal faults – its components 2. Reverse fault – its components	Guiding students while drawing	Evaluating problems and awarding marks
9	Bore Hole problem assessing the area over which the bed spreads below G.L	CO-3	1. Given 3 different bores at different depths, find the dip & strike of the bed. 2. Given the three different	Guiding students while drawing	Evaluating problems and awarding

			bores along different directions and of different depths, find the depth of the fourth hole below the ground.		marks
10	MAP-1 Different beds dipping homogeneously	CO-4	1. Find strike, dip direction, amount of dip, order of deposition of beds & thickness of beds by drawing cross section along the true dip direction.	Guiding students while drawing	Evaluating problems and awarding marks
11	MAP-2 Dipping beds with a dyke	CO-4	1. Find strike, dip direction, amount of dip, order of deposition of beds & thickness of beds by drawing cross section along the true dip direction.	Guiding students while drawing	Evaluating problems and awarding marks
12	MAP-3 Dipping beds along directions other than E, S, N &W	CO-4	1. Find strike, dip direction, amount of dip, order of deposition of beds & thickness of beds by drawing cross section along the true dip direction.	Guiding students while drawing	Evaluating problems and awarding marks
13	MAP-4 Dipping beds with a fault	CO-5	1. Find strike, dip direction, amount of dip, order of deposition of beds & thickness of beds by drawing cross section along the true dip direction. 2. Locating the slip, throw, heave, hade and naming the fault.	Guiding students while drawing	Evaluating problems and awarding marks
14	MAP-5 Given the three stations and thickness of different beds, completion of outcrop.	CO-5	1. Draw the cross section along the direction of true dip.	Guiding students while drawing	Evaluating problems and awarding marks
15	MAP-6 Given the three stations and thickness of different beds, completion of outcrop.	CO-5	1. Draw the cross section along the direction of true dip.	Guiding students while drawing	Evaluating problems and awarding marks
16	MAP-7 Given the three stations and	CO-5	1. Draw the cross section along the direction of true	Guiding students	Evaluating problems

	thickness of different beds, completion of outcrop.		dip.	while drawing	and awarding marks
17	**MID TEST – II**				
18	**END EXAM**				