

MOHAMED SATHAK A J COLLEGE OF ENGINEERING

Siruseri IT park, OMR, Chennai - 603103

LESSON PLAN							
Department of Civil Engineering							
Name of the Subject	ENGINEERING GEOLOGY			Name of the handling Faculty	Mrs.S.Hemavathi		
Subject Code	CE8392			Year / Sem	II / III		
Acad Year	2021-2022			Batch	2020-2024		
Course Objective							
1. The students will be able to understand the importance of geological knowledge such as earth, earthquake, volcanism.							
2 The students will be able to understand the mineral characteristics of rocks.							
3. Students will understand about the classification of rocks.							
4. Students will be able to understand the subsurface characteristics and investigation of rocks							
5. Students will be able to understand the application part of geophysical investigation.							
Course Outcome							
1.Explain the importance of geological knowledge such as earth, earthquake, volcanism and the action of various geological agencies.							
2.Describe basics knowledge on properties of minerals.							
3. Explain about types of rocks, their distribution and uses							
4. Describe the methods of study on geological structure							
5. Explain the importance of this knowledge in projects such as dams, tunnels, bridges, roads, airport and harbor							
Lesson Plan							
Sl. No.	Topic(s)	T / R*	Periods Required	Mode of Teaching (BB / PPT / NPTEL / MOOC / etc)	Blooms Level (L1-L6)	CO	PO
		Book					
UNIT I PHYSICAL GEOLOGY							
1	Geology in civil engineering , branches of geology	T5	1	NPTEL	L1	CO1	PO1
2	structure of earth and its composition	T5	1	BB, PPT	L2	CO1	PO2
3	weathering of rocks, scale of weathering	T5	1	BB,PPT	L2	CO1	PO2
4	soils	T5	1	BB	L1	CO1	PO1
5	Soils, Landforms and processes associated with river, wind, groundwater and sea ,Relevance to civil engineering.	T5	2	BB	L2	CO1	PO1
6	Plate tectonics	T5	1	BB,PPT	L1	CO1	PO2
7	Earth quakes	T5	1	BB,PPT	L2	CO1	PO2
8	Seismic zones in India	T5	1	BB	L1	CO1	PO1

Suggested Activity: Quiz							
Evaluation method : 10 Questions, each carries 1 mark							
UNIT II MINEROLOGY							
9	Physical properties of minerals	T5	1	NPTEL	L1	CO2	PO1
10	Quartz group, Feldspar group, Pyroxene	T5	1	BB,PPT	L1	CO2	PO1
11	Hypersthene and augite	T5	1	BB,PPT	L2	CO2	PO2
12	Amphibole	T5	1	BB,PPT	L2	CO2	PO1
13	Hornblende, Mica	T5	2	BB,PPT	L2	CO2	PO2
14	Muscovite and biotite	T5	1	BB,PPT	L2	CO2	PO2
15	Calcite, Gypsum	T5	1	BB,PPT	L2	CO2	PO1
16	Clay minerals.	T5	1	BB,PPT	L1	CO2	PO1
Suggested Activity: Assignment							
Evaluation method: Permeability of a Soil							
UNIT III PETROLOGY							
17	Classification of rocks	T5	1	NPTEL	L2	CO1	PO1
18	Distinction between Igneous, Sedimentary and Metamorphic rocks.	T5	1	NPTEL	L2	CO3	PO1
19	Engineering properties of rocks	T5	1	NPTEL	L2	CO3	PO1
20	Description, occurrence, engineering properties, distribution and uses of Granite, Dolerite	T5	1	NPTEL	L1	CO3	PO2
21	Description, occurrence, engineering properties, distribution and uses of Basalt, Sandstone	T5	1	NPTEL	L1	CO3	PO2
22	Description, occurrence, engineering properties, distribution and uses of Limestone, Laterite	T5	2	NPTEL	L1	CO3	PO2
23	Description, occurrence, engineering properties, distribution and uses of Shale, Quartzite, Marble	T5	1	NPTEL	L1	CO3	PO2

24	Description, occurrence, engineering properties, distribution and uses of Slate,	T5	1	NPTEL	L1	CO3	PO2
Suggested Activity: Assignment							
Evaluation method : Literatures in settlement							
UNIT IV STRUCTURAL GEOLOGY AND GEOPHYSICAL METHODS							
25	Geological maps	T5	1	BB,PPT	L1	PO4	PO1
26	Attitude of beds, study of structures	T5	1	BB,PPT	L1	PO4	PO1
27	Folds, faults and joints relevance to civil engineering.	T5	1	BB,PPT	L2	PO4	PO2
28	Geophysical methods	T5	2	BB,PPT	L1	PO4	PO1
29	Seismic method for subsurface investigations.	T5	2	BB,PPT	L2	PO4	PO2
30	Electrical method for subsurface investigations.	T5	1	BB,PPT	L2	PO4	PO2
Suggested Activity: Quiz							
Evaluation method : 10 Questions, each carries 1 mark							
UNIT V APPLICATION OF GEOLOGICAL INVESTIGATIONS							
31	Remote sensing for civil engineering applications	T5	2	BB	L1	CO5	PO5
32	Geological conditions necessary for design and construction of Dams, Reservoir.	T5	2	BB	L1	CO5	PO5
33	Geological conditions necessary for design and construction of Tunnels, and Road cuttings	T5	1	BB	L1	CO5	PO5
34	Hydrogeological investigations and mining	T5	2	BB	L2	CO5	PO2
35	Coastal protection structures. Investigation of Landslides, causes and mitigation.	T5	2	BB	L2	CO5	PO1
Suggested Activity: Case Studies							
Evaluation method : Solpe Stability							
Content Beyond the Syllabus Planned							
1	Tools used to design Dam						
2	Tools used in Remote sensing						
Text Books							
1	Varghese, P.C., Engineering Geology for Civil Engineering Prentice Hall of India Learning Private Limited, New Delhi, 2012.						

CO2	PO1 :Engineering knowledge in Physical properties of minerals,Quartz group, Feldspar group, Pyroxene, Amphibole,Calcite, Gypsum,Clay minerals. PO2 : Problem analysis in Hypersthene and augite, Hornblende, Mica,Muscovite and biotite, PSO1: Sustainable solution for Minerology				
CO3	PO1 : Engineering knowledge in Classification of rocks, Distinction between Igneous, Sedimentary and Metamorphic rocks, Engineering properties of rocksPO2 : Problem analysis in Description, occurrence, engineering properties, distribution and uses of Granite, Dolerite, Basalt, Sandstone, Limestone, Laterite, Shale, Quartzite, Marble, Slate, Gneiss and Schist. PSO1: Sustainable solution for Petrology				
CO4	PO1 : Engineering knowledge in Geological mapss, Attitude of beds, study of structures, Geophysical methods PO2 : Problem analysis in Folds, faults and joints relevance to civil engineering, Seismic method for subsurface investigations, Electrical method for subsurface investigations. PSO1: Sustainable solution forStructural geology and geophysical methods.				
CO5	PO1 : Engineering knowledge in Coastal protection structures. Investigation of Landslides, causes and mitigation. PO2 : Problem analysis in Hydrogeologicalinvestigations and miningPO5 : Modern tool usage in Remote sensing for civil engineering applications,Geological conditions necessary for design and construction of Dams, Reservoir,Geological conditions necessary for design and construction of Tunnels, and Road cuttings, PSO1: Sustainable solution for Application of Geological investigations				
3	High level	2	Moderate level	1	Low level
Name & Sign of Faculty Incharge :					
Name & Sign of Subject Expert :					
Head of the Department :					

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