



SWARNANDHRA

COLLEGE OF ENGINEERING & TECHNOLOGY

(AUTONOMOUS)

Accredited by National Board of Accreditation, AICTE, New Delhi, Accredited by NAAC with "A" Grade – 3.32 CGPA Recognized under 2(f) & 12(B) of UGC Act 1956, Approved by AICTE, New Delhi, Permanent Affiliation to JNTUK, Kakinada Seetharampuram, W G DT, Narsapur-534280, (Andhra Pradesh)

DEPARTMENT OF CIVIL ENGINEERING

TEACHING PLAN

Course Code	Course Title	Semester	Branch	Contact Periods per Week	Academic Year	Date of commencement of Semester
23CE4T01	ENGINEERING GEOLOGY	IV	CE	5	2024-25	16-12-2024
COURSE OUTCOMES: Students are able to						
1	Understand the significance of geological agents on Earth surface and its significance in Civil Engineering. (K2)					
2	Identify and understand the properties of Minerals and Rocks. (K2)					
3	Explain the concepts of Groundwater and its geophysical methods. (K2)					
4	Classify and measure the Earthquake prone areas, Landslides and subsidence to practice the hazard zonation. (K2)					
5	Investigate the project site for mega/mini civil engineering projects and site selection for mega engineering projects like Dams, Reservoirs and Tunnels. (K3)					
UNIT	Out Comes / Bloom's Level	Topics No.	Topics/Activity	Text Book / Reference	Contact Hour	Delivery Method
I	CO1: Understand the significance of geological agents on Earth surface and its significance in Civil Engineering. (K2)	Unit –I : INTRODUCTION				
		1.1	Branches of Geology	T2,R1	1	Chalk & Talk, Active Learning
		1.2	Importance of Geology in Civil Engineering with case studies	T2,R1	1	
		1.3	Weathering: Weathering of rocks (Des: How weathering changes the formation of rocks and factors affecting the rocks)	T2,R1	1	
		1.4	Geological agents in weathering of rocks	T2,R1	1	
		1.5	weathering process of rock	T2,R1	1	
		1.6	River process and their development (Des: Importance of rocks in the formation of river beds and its flow)	T1, T2, R1	1	
		1.7	Different stages of river formation	T1, T2, R1	1	



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Total 07

				Total	07
II	CO2: Identify and understand the properties of Minerals and Rocks. (K2)	Unit-2 : MINERALOGY AND PETROLOGY			
		2.1	Definitions of mineral and rock	T1,R1	1
		2.2	Different methods of study of mineral and rock (Des: Methods to identify rock and its formation)	T1,R1	1
		2.3	The study of physical properties of minerals	T1,R1	1
		2.4	The study of physical properties of rocks	T1,R1	1
		2.5	Common rock forming minerals like Feldspar, Quartz Group, Olivine	T1,R1	1
		2.6	Common rock forming minerals like Augite, Hornblende, Mica Group, Asbestos, Talc, Chlorite, Kyanite, Garnet, Calcite	T1,R1	1
		2.7	Ore forming minerals like Pyrite, Hematite, Magnetite, Chlorite, Galena,	T1,R1	1
		2.8	Pyrolusite, Graphite, Chromite, Magnetite and Bauxite.	T1,R1	1
		2.9	Classification, structures, textures and forms of Igneous rocks	T1,R1	1
		2.10	Classification, structures, textures and forms of Sedimentary rocks,	T1,R1	1
		2.11	Metamorphic rocks and their megascopic study of granite varieties, (pink, gray, green). Pegmatite, Dolerite, Basalt, Shale,	T1,R1	1
		2.12	Study of sand stone, Lime stone, Laterite, Quartzite, Gneiss	T1,R1	1
		2.13	Study of Schist, Marble, Khondalite and Slate	T1,R1	1
				Total	13
Unit-III : STRUCTURAL GEOLOGY – GEO PHYSICS					
		3.1	Strike, Dip of common geological structures	T1,R1	1

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III	CO3: Explain the concepts of Groundwater and its geophysical methods. (K2)	3.2	Outcrop study of common geological structures	T1,R1	1	Chalk& talk, PPT, Active learning
		3.3	Folds associating with the rocks (Des: Identification of different folds and faults in the formation of rocks)	T1,R1	1	
		3.4	Joints associating with the rocks (Des: Identification of different faults in the formation of rocks)	T1,R1	1	
		3.5	Unconformities associating with the rocks (Des: Identification of different folds and faults in the formation of rocks)	T1,R1	1	
		3.6	Types of folds and their importance	T1,R1	1	
		3.7	Types of faults in rocks and their importance	T1,R1	1	
		3.8	Mechanism and importance in civil engineering	T1,R1	1	
		3.9	Importance of Geophysical methods	T1,R1	1	
		3.10	Classification of Geophysical methods	T1,R1	1	
		3.11	Principles of Geophysical study by Gravity method (Des: Different methods to study geophysical nature of rocks and their formation)	T1, R1	1	
		3.12	Principles of Geophysical study by Magnetic method	T1,R1	1	
		3.13	Electrical methods	T1, R1	1	
		3.14	Seismic methods	T1,R1	1	
		3.15	Radiometric method (Des: Different methods to study geophysical nature of rocks and their formation)	T1,R1	1	
		3.16	Electrical resistivity (Des: Different methods to study geophysical nature of rocks and their formation)	T1,R1	1	
		3.17	Seismic refraction methods	T1,R1	1	
		3.18	Engineering properties of rocks	T1, R1	1	



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Total

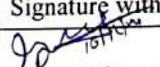
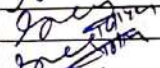


18

		Total		18	
IV	CO4: Classify and measure the Earthquake prone areas, Landslides and subsidence to practice the hazard zonation. (K2)	UNIT-IV : GROUND WATER- EARTHQUAKES AND LAND SLIDES			
		4.1	Concept of ground water, water table	T1,R1	1
		4.2	Concept of cone of depression	T1,R1	1
		4.3	Ground water exploration techniques. (Des: Water table identification, groundwater alteration reasons)	T1,R1	1
		4.4	Geological controls of ground water Movement	T1,R1	1
		4.5	Earthquakes and Land Slides: terminology, Classification, (Des: Earth quake reasons based on geological factors)	T1,R1	1
		4.6	Causes and effects of earth quakes	T1,R1	1
		4.7	Shield areas and Seismic belts	T1,R1	1
		4.8	Richter scale intensity	T1, R1	1
		4.9	Precautions of building constructions in seismic areas	T1,R1	1
		4.10	Classification of landslides, (Des: Landslides reasons, few prevention measures)	T1,R1	1
		4.11	Causes and effects of landslides	T1,R1	1
		4.12	Measures to be taken prevent their occurrence at Landslides	T1,R1	1
		Total		12	
	CO5: Investigate the project site for mega/mini civil engineering projects and site selection for mega engineering projects like Dams, Reservoirs	UNIT-V : GEOLOGY OF DAMS, RESERVOIRS AND TUNNELS			
		5.1	Types of Dams	T1, R2	1
		5.2	Purpose of Dams	T1, R2	1
		5.3	Geological considerations in the selection of a Dam site (Des: Dam site selection based on geological structure)	T1, R2	1
		5.4	Geological considerations in the selection of a Dam site	T1, R2	1
		5.5	Life of Reservoirs	T1, R2	1
		5.6	Purpose of Tunneling	T1, R2	1
		5.7	Tunneling effects	T1, R2	1
		5.8	Lining of Tunnels	T1, R2	1

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V	and Tunnels. (K3)		(Des: Tunnels and their formation and purpose of tunnels)			Chalk & talk, PPT, Active Learning
		5.9	Lining of Tunnels	T1, R2	1	
		5.10	Influence of Geology for successful Tunneling	T1, R2	1	
					Total	10
					CUMULATIVE PROPOSED PERIODS	60
Text Books:						
S.No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	N. Chennakesavulu / "Text book of Engineering Geology"/ Laxmi Publications Pvt Ltd. / 2018					
2	Parbin Singh/ Engineering Geology and general geology/8thEdition/ Katson educational series / 2023					
Reference Books:						
S. No.	AUTHORS, BOOK TITLE, EDITION, PUBLISHER, YEAR OF PUBLICATION					
1	D. Venkata Reddy / 'Engineering Geology'/ Vikas Publishing House Pvt. Ltd/ 2013					
2	Alan E Kehew / 'Geology for Engineers and Environmental Society' / Pearson publications./ 2013					
3	Subinoy Gangopadhyay / Engineering Geology'/ Oxford University press / 2014					
Web Details						
1	https://www.youtube.com/watch?v=aTVDiRtRook&list=PLDF5162B475DD915F					
2	https://nptel.ac.in/courses/105105106/3					
3	https://www.youtube.com/watch?v=sTYao4RZck&list=PLDF5162B475DD915F&index=4					
4	https://www.youtube.com/watch?v=mnTMOtw0ubg					

	Name	Signature with Date
i. Faculty	Dr M.S.V.K.V. Prasad	
ii. Course Coordinator	Dr M.S.V.K.V. Prasad	
iii. Module Coordinator	Dr M.S.V.K.V. Prasad	
iv. Programme Coordinator	Prof. G.V.L.N. Murthy	


Principal