



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	2025-26	10-12-2025	
COURSE OUTCOMES: Students are able to							
1	Identify the significance of geological agents on earth surface and its significance in Civil Engineering. (K1)						
2	Indicate different methods to study physical properties of Minerals and Rocks. (K2)						
3	Extend the concepts of structural geology of rocks and minerals. (K2)						
4	Prepare earthquake prone areas, landslides and subsidence to practice the hazard zonation. (K3)						
5	Relate 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: Identify the significance of geological agents on earth surface and its significance in Civil Engineering. (K1)	Unit –I : INTRODUCTION					Chalk & Talk, PPT, Active Learning & Tutorial
		1.1	Branches of Geology		T2, R1	1	
		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		T1, T2, R1	1	
		1.7	Different stages of river formation		T1, T2, R1	1	
Total						07	



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II	CO2: Indicate different methods to study physical properties of Minerals and Rocks. (K2)	Unit-2 : MINERALOGY AND PETROLOGY				Chalk & Talk, PPT, Active Learning & Tutorial
		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	
		3.2	Outcrop study of common	T1, R1	1	



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III	CO3: Extend the concepts of structural geology of rocks and minerals. (K2)		geological structures			Chalk & Talk, PPT, Active Learning & Tutorial
		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	
		Total				
IV	CO4: Prepare earthquake prone areas, landslides and subsidence to practice the hazard zonation. (K3)	UNIT-IV: GROUND WATER- EARTHQUAKES AND LAND SLIDES				Chalk & Talk, PPT, Active Learning & Tutorial
		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	



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		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	
		4.13	Importance of Geophysical methods	T1, R1	1	
		4.14	Classification of Geophysical methods	T1, R1	1	
		4.15	Principles of Geophysical study by Gravity method (Des: Different methods to study geophysical nature of rocks and their formation)	T1, R1	1	
		4.16	Principles of Geophysical study by Magnetic method	T1, R1	1	
		4.17	Electrical methods	T1, R1	1	
		4.18	Seismic methods	T1, R1	1	
		4.19	Radiometric method (Des: Different methods to study geophysical nature of rocks and their formation)	T1, R1	1	
		4.20	Electrical resistivity (Des: Different methods to study geophysical nature of rocks and their formation)	T1, R1	1	
		4.21	Seismic refraction methods	T1, R1	1	
		4.22	Engineering properties of rocks	T1, R1	1	
		Total			22	
V	CO5: Relate the project site for mega/mini civil engineering projects and	UNIT-V: GEOLOGY OF DAMS, RESERVOIRS AND TUNNELS				Chalk & Talk, PPT, Active Learning & Tutorial
		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	



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	site selection for mega engineering projects like Dams, Reservoirs and Tunnels. (K3)	5.8	(Des: Tunnels and their formation and purpose of tunnels)	T1, R2	1	
		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 Gangopadhay / 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	Dr G.V.L.N. Murthy	

Principal