



NBA Accredited
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Affiliated to Visvesaraya Technological University (VTU)
Recognised by Govt. Karnataka & Approved by A. I. C. T. E. New Delhi

Course No: 6	Dept: Civil
Course Title: Engineering Geology	Semester: III
Instructor In Charge: Mr. Sanath Kumar K R	Academic Year: 2020-21
Lab. Instructor: Mr. Ramesh C	

SUBJECT DESCRIPTION:

This course explores the fundamentals of geology applied to civil engineering problems. Topics include rock and mineral types, soil properties, rock mechanics, geologic structures and its effect on engineering structure, active tectonics and earthquake hazards, slope stability and landslides, groundwater, rivers and flood hazards.

Text Books:

- Text book of Geology by P.K. Mukherjee, World Press Pvt. Ltd. Kolkatta. ISBN-13 9788187567547
- Foundations of Engineering Geology, by Tony Waltham (3rdEd.) Universities Press. ISBN 9780415469609
- Principles of Engineering Geology and Geotechnics by Dimitri P. Krynine and William R. Judd. ISBN 13: 9788123906034
- Structural Geology (3rd Ed.) by M. P. Billings, Published by Prentice Hall of India Pvt. Ltd. New Delhi
- Text of Engineering and General Geology by Parbin Singh, Published by S. K. Kataria and Sons, New Delhi. ISBN: 8188458511, 9788188458516.
- A text book of Engineering Geology by Chenna Kesavulu, MacMillan India Ltd.
- Engineering Geology Laboratory Manual by Satyanarayana Swamy B.S. (1985), Eurasia Publishing House, New Delhi

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- A Text Book of Mineralogy by Dana, E.S & Ford, W.E. (1985), WELLY, Delhi

Reference Books:

- Civil Engineering - Engineering Geology, nptel.ac.in/courses/105/105/105105106
- Rock Mechanics for Engineers by Dr. B. P. Verma, Khanna Publishers, New Delhi.
- Ground water geology by Todd D.K. John Wiley and Sons, New York.
- Physical Geology by Arthur Holmes, Thomson Nelson and Sons, London.
- Ground water assessment, development and management by K. R. Karanth, Tata McGraw Hills
- Rutley's Elements of Mineralogy by Read, H.H. (1984), 26th ed., CBS, N. Delhi R2. Billings, Marland P (1987) Structural Geology, 3rd ed., PHI, Delhi.

1 NA	Self Study/ Online/ Outsourced	Refile Document	Remarks
2 NA			
3 NA			
4 NA			

LECTURE PLAN:

Class Sl No	Module and Title	Topics to be covered	% of portions covered	
			Covered in the chapter	Cumulative
1.	Module – I Introduction to Engineering Geology	<u>Geologic Structures</u>	20%	20%
2.		<u>Geologic Maps</u>		
3.		Stratigraphic Sections		
4.		<u>Remote Sensing in Engineering Geology</u>		
5.		Physical Properties of Minerals		
6.		<u>Optical Properties - Chemical Characteristics of Minerals</u>		
7.		- <u>Optical Properties</u> -		
8.		<u>Chemical Characteristics of Minerals</u>		

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9.	Revision	Module – I		
10.	Assignment	Module – I		
11.	Module – II Origin And Types of Rocks	<u>Origin And Types of Soils</u>	20%	40%
12.		<u>Igneous Rocks - Sedimentary Rocks - Metamorphic Rocks</u>		
13.		<u>Weathering - Sediment Transport and Deposition</u>		
14.		<u>Introduction to Subsurface Exploration</u>		
15.		<u>Sampling and Non - Intrusive Methods - Index Properties and Classification of Soils</u>		
16.		<u>Index Properties of Rock and Rock Mass</u>		
17.		<u>Stress-Strain Behavior of Soil and Rock</u>		
18.		<u>In-situ State of Stress</u>		
19.	Revision	Module – II		
20.	Assignment	Module – II		
21.	Module – III Geologic Considerations in Tunneling	<u>Geologic Considerations in Tunneling</u>	20%	60%
22.		<u>Geologic Considerations in Dam Construction</u>		
23.		<u>Groundwater - Preliminaries</u>		
24.		<u>Groundwater Flow</u>		
25.		<u>Groundwater Related Engineering Issues</u>		
26.		<u>Groundwater Related Engineering Issues</u>		
27.		<u>Groundwater Over Utilization</u>		
28.		<u>Groundwater Over Utilization</u>		
29.	Revision	Module – III		
30.	Assignment	Module – III		
31.	Module – IV Plate Tectonics	<u>Earthquake Hazard Assessment</u>	20%	80%
32.		Geologic Hazards		

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33.	and Earthquake	<u>Geologic Hazards - Seismicity and Volcanism</u>		
34.		<u>Shoreline Processes</u>		
35.		<u>Landslide Hazards - Zoning</u>		
36.		<u>Subsidence , Collapsible Soils.</u>		
37.		Seismic measurement and wave types.		
38.		Seismic measurement and wave types.		
39.		Revision	Module – IV	
40.	Assignment	Module – IV		
41.	Module – V HYDROGEOLOGY: R4, T5(428)	Hydrological cycle; distribution of ground water in the earth crust	20%	100%
42.		properties of water bearing geological formation: Aquifers and their types		
43.		selection of sites for well locations and spacing of wells geological method		
44.		selection of sites for well locations and spacing of wells hydrological method		
45.		geophysical (electrical resistivity) investigations for ground water exploration		
46.		Artificial recharge of groundwater methods		
47.		Rainwater harvesting		
48.		Rainwater harvesting. Sea water intrusion and remedial measures. Bore Hole Problems.		
49.	Revision	Module – V		
50.	Future Scope of learning	NA		

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EVALUATION SCHEME:

Component	Duration	Weightage	Date
CIE 1	90 min	40%	28-30 th Sep 2020
CIE 2	90 min	40%	6-9 th Nov 2020
Makeup CIE	90 min	40%	25-27 th Nov 2020
AAT-1	2days	10%	
AAT 2	2days	10%	
SEE	180 Min	50%	11-29 th Dec 2020
MakeUp SEE	180 Min	50%	14 Jan 2021 onwards

Course In Charge
Mr. Sanath Kumar K R

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