

Course No
CE 214

Course Name
ENGINEERING GEOLOGY

L-T-P-Credits
(3- 0- 0: 3)

Prerequisite: nil;

Co requisite: nil

Course Objectives:

1. To introduce basic geology to civil engineering students
2. To understand the seismicity and earthquake associated with geology
3. To acquire the knowledge of the most important rocks and minerals

Course Outcomes:

1. The students will get the basic knowledge about natural material like rocks and minerals and their usage as well as their availability.
2. The students will get acquainted with natural dynamic processes and their actions.
3. The students will understand the influence of natural processes and geological factors on civil structures and help them to take decision while planning, design and execution stage of the structures in their professional life.
4. The students will know the significance of geological investigations for civil engineering projects and site selection as well as for the preparation of feasibility reports and others.
5. The knowledge of subject will also help them to understand the geological maps and language for the discussion on geological reports to resolve civil engineering issues.

SYLLABUS

Module	Contents	Hours
	Introduction	2
I	Importance of Geology in Civil Engineering.	
	Earth Materials	6
II	Rocks, Soils, Minerals, Types of minerals and their significance.	
	Study of Rocks	8
III	Igneous, Sedimentary and Metamorphic rocks with reference to their origin, texture, structure and classification; Weathering process, Transportation process and Sedimentation process.	
	Earth Structure	8
IV	Fold, Fault, Joints and Shear zones with special reference to their classification, genesis and their significance in Civil Engineering projects.	
	Earthquakes	8
V	Causes, Classification, Magnitude, Intensity, Seismic hazards zoning, Seismic zones of India, Elementary idea about Plate Tectonics.	
VI	Geological and Geophysical Investigations	4
	Representation of geological data, Site classification, Geological consideration for the design of Dams, Tunnels, Bridges and other civil works.	

Essential Readings:

1. A.Parthasarathy, V.Panchapakesan and R. Nagarajan, "Engineering Geology", Wiley India Pvt. Ltd. First edition.2013.
2. P. Singh, "Engineering & General Geology", S.K. Kataria and Sons.8th Edition 2008.Reprint 2013

Supplementary Reading:

1. D.P.Krynine and W.R.Judd, "Principles of Engineering Geology and Geotechnics", CBS Publishers and Distributors. 1st edition (2005).
2. P. K. Mukherjee, "A Textbook of Geology", World Press Pvt. Ltd.2nd Edition 2001. Reprint 2013.