



Studio
Shodwe

GEOLOGY FOR CIVIL ENGINEERING

Overview

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- *Defining Geology*
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- *Relevance of Geology to Engineering*
- *Geology in the 21st Century Engineering*
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Introduction

The science of geology applied to relevant aspects of engineering practice is engineering geology, in a general sense. Association of Environmental and Engineering Geologists states that it is the discipline of applying geologic data, techniques, and principles to the study of rock and soil materials, surface and subsurface fluids, and interactions of introduced materials and processes with the environment so that geologic factors are adequately recognized, interpreted, and presented for use in engineering and related practice



Learning Objectives



01

Be able to
describe
geology



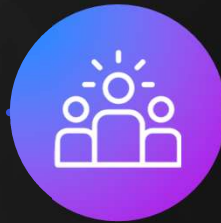
02

Be able to
learn of
geology's
history



03

Be able to
determine the
importance of
geology to civil
engineering



04

Be able to
relate geology
to present
engineering
practice



Definition

What is Geology?

- The word geology means 'Study of the Earth'.
- Also known as geoscience or earth science, Geology is the primary Earth science and looks at how the earth formed, its structure and composition, and the types of processes acting on it
- Geology is concerned with the history of the earth over the course of its 4.5 billion year life. By studying the structures of the earth we can unlock its hidden past and anticipate its future.

Why do we study geology?

- Like all forms of science, we study geology to make new discoveries and learn more about the world around us.

How do we study geology?

- Geology is all around us, from the sand and rock used to build the walls and roads, to the numerous minerals found in everyday life objects and in the food we eat, to the landscape around us and our leisure pursuits.

Origins of Geology



Ancient Civilization

Geology has been of interest to humans as far back as ancient Greece in the 4th century. **Aristotle** was one of the first people to make observations about the earth.



Industrial Age

The Scottish naturalist **James Hutton** (1726–1797) is known as the father of geology because of his attempts to formulate geological principles based on observations of rocks.



Modern Era

Charles Berkey was the chief geologist during the 1926 and 1927 Asiatic Expeditions. He became a geological consultant to the Bureau of Reclamation in 1928 just as the proposed Hoover Dam was passing into the stage of final study.



Relevance



Geological maps help in planning civil engineering projects. It provides information about the structural deposition of rock types in the proposed area.



Geology helps in determining the earthquake-prone areas. If any geological features like faults, folds, etc. are found, they have to be suitably treated to increase the stability of the structure.



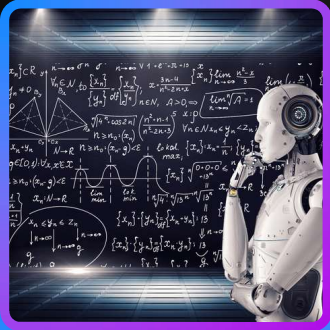
Geology helps to identify area susceptible to failures due to geological hazards such as earthquake, landslides, weathering effects, etc.



The knowledge about the nature of the rocks is very necessary for tunnelling, constructing roads and in determining the stability of cuts and slopes.

Geology in the 21st Century

Technology



The rapid advancements in emerging technologies in engineering are changing the landscape of various industries. Introducing new and disruptive technologies such as IoT, AI, blockchain, AR/VR, and 3D printing presents new opportunities for businesses to improve their productivity.

Construction Materials



In the world of geology, "construction materials" are naturally occurring rock and sediment deposits that are used by the construction industry.

Construction Environment



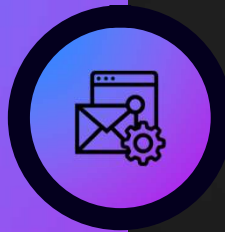
Engineering geology plays a critical role in construction projects. It provides essential information about the geological features, physical properties of the soil and rock, and the potential hazards that may impact the construction project.

Construction Safety



Prior to beginning laboratory work, faculty, students, and staff are required to take applicable in-person training for: (1) General Hazard Communication and Lab Safety Training, (2) Hazardous Waste and Storeroom Procedures, and (3) BioSafety, if needed, and to complete affiliated online tests for each training.

Synthesis



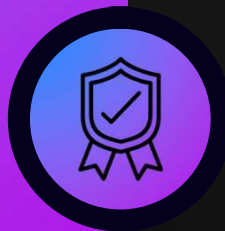
Geology

To summarize it all we should explore and get information about the study of geology



Origins

Founded since ancient times even during the time of Aristotle. Modern geology has found itself as one of the foundations of modern civil engineering



Importance

Geology is essential in the development of new engineering techniques/technologies; development of construction materials; creating green and climate-friendly solutions and enhancing construction safety



THANK YOU

For listening

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