

K L UNIVERSITY
ENGINEERING GEOLOGY (CE C 205)

SYLLABUS

L	T	P	Cr
3	1	2	5

UNIT – 1 Introduction

Branches of geology, Importance of geology from Civil engineering point of view, Internal structure of the earth

Physical Geology

Introduction; Weathering Process of rocks and its importance in civil engineering; Soil formation, Soil profile; Geological action of Rivers and wind

UNIT – 2 Mineralogy

Definition of mineral; Significance of different physical properties of minerals. Study of Common rock forming minerals and their identification; Clay minerals, Study of common economic minerals – Hematite, Magnetite, Galena. Graphite, Bauxite, Coal.

Petrology:

Igneous Rocks: Introduction; Rock Cycle, Formation and Classification of Igneous rocks; Structures and textures of Igneous rocks.

Sedimentary Rocks: Formation and Classification of Sedimentary rocks; Structures and textures of Sedimentary Rocks.

Metamorphic Rocks: Classification of Metamorphic rocks; Structures and textures of Metamorphic rocks.

Engineering Properties of Rocks: Different Engineering property of rocks. Study of common Rocks – Granite - Basalt – Dolerite – Pegmatite – Sand Stone – Lime Stone – Shale – Laterite - Granite gneiss – schist – Marble - quartzite – khondalite – Charnockite.

UNIT – 3 Structural Geology

Introduction; Strike and Dip; Outcrop, Types of Folds; Faults; Joints; Unconformities and their importance in Civil Engineering constructions.

Earthquakes: Terminology; Classification, Causes and effects of earthquakes; Seismic belts; Civil Engineering considerations in seismic areas.

Land Slides: Classification; Causes and effects of Landslides; Preventive measures of Landslides.

UNIT – 4 Geophysical Investigations

Introduction; Methods of site investigations; Classification of Geophysical methods – Electrical method, Seismic method and their importance in Civil Engineering; Sight for location of a well point, Remote sensing

Hydro Geology: Hydrological Cycle, occurrence and moment of ground water; Springs, occurrence of water in various lithological formations.

UNIT – 5 Dams

Dams terminology; Types of dams; Geological considerations for selection of Dam sites; Geology of some Indian Dam sites

Tunnels: Purpose of tunneling; Geological considerations for tunneling; Over break; Geology of some tunnel sites;

TEXT BOOK:

1. Engineering and General Geology by Parbin Singh; S. K. Kataria & Sons, New Delhi.
2. Principles of Engineering Geology by KVGK Gokhale, B.S. Publications, Hyderabad.

REFERENCE BOOKS:

1. Principles of Engineering Geology by K.M. Bangar, Standard Publications, Distributors, 1705-B, Nai sarak, New Delhi.
2. A text Book of Engineering Geology by N. Chennakesavulu; Macmillan India Ltd., Delhi.
3. Rock Mechanics for Engineers by Dr. B.P.Varma, Khana Publishers, Delhi-6.

LIST OF EXPERIMENTS

1. Study of physical properties of minerals.
 - A) Rock forming minerals
 - b) Economic minerals
2. Megascopic identification, structure and textural study of Rocks
 - a) Igneous rocks
 - b) Sedimentary rocks
 - c) Metamorphic rocks
3. Study of geological maps
4. Study of structural geology models.
5. Study of tunnel models.
6. Study of river features.
7. Base map reading
8. Base map preparation.
9. Drainage density.
10. Watershed delineation.
11. Slope analysis.
12. Land use land cover using satellite images
13. Electrical resistivity method for identification of ground water potential and thickness of strata – (demo).