

Course Title: Engineering Geology Laboratory (0:1:2)

[As per Choice Based Credit System (CBCS) scheme]

SEMESTER – IV

Subject Code	15CVL48	IA Marks	20
Number of Lecture Hours/Week	03 (1hr tutorial + 2hr laboratory)	Exam Marks	80
Total Number of Lecture Hours	42	Exam Hours	03

CREDITS – 02

Course objectives: This course will enable students

1. To identify the minerals and rocks based on their inherent properties and uses in civil engineering
2. To interpret the geological maps related to civil engineering projects.
3. To learn the dip and strike, borehole problems, thickness of geological formation related to foundation, tunnels, reservoirs and mining.
4. To understand subsurface geological conditions through a geophysical techniques and watershed management.
5. To visit the civil engineering projects like dams, reservoirs, tunnels, quarry sites etc.

Modules	Teaching Hours	Revised Bloom's Taxonomy (RBT) Level
1. Identification of minerals as mentioned in theory, their properties, uses and manufacturing of construction materials.	6 Hours	L1, L2
2. Identification of rocks as mentioned in theory, their engineering properties and uses in construction and decorative purposes	6 Hours	L2, L3
3. Dip and Strike problems: Determination of dip and strike direction in Civil Engineering projects (Railway lines, tunnels, dams, reservoirs) –graphical or any other method.	6 Hours	L4
4. Bore hole problems: Determination of subsurface behavior of rocks, their attitude related to foundation, tunnels, reservoirs and mining. Triangular and Square land, assuming ground is horizontal.	6 Hours	L3, L4, L5
5. Calculation of Vertical, True thickness and width of the outcrops.	6 Hours	L4, L5
6. Interpretation of Electrical resistivity curves to find out subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone	4 Hours	L3, L4
7. Interpretation of Toposheets and geological maps related to Civil Engineering projects.	8 Hours	L5, L6

Course outcomes:

During this course, students will develop expertise in;

1. Identifying the minerals and rocks and utilize them effectively in civil engineering practices.
2. Understanding and interpreting the geological conditions of the area for the

- implementation of civil engineering projects.
3. Interpreting subsurface information such as thickness of soil, weathered zone, depth of hard rock and saturated zone by using geophysical methods.
 4. The techniques of drawing the curves of electrical resistivity data and its interpretation for geotechnical and aquifer boundaries

Program Objectives (as per NBA):

- Engineering Knowledge.
- Problem Analysis.
- Design / development of solutions (partly).
- Interpretation of data.

Question paper pattern:

- All are individual experiments
- Instructions as printed on the cover page of answer script for split up of marks to be strictly followed.
- All exercises are to be included for practical examination.

Question Paper Pattern		
Qn. No.	EXPERIMENT	MARKS (80)
1	Identification of Minerals by giving their physical properties and civil engineering applications (5 minerals)	20 (5 x 4)
2	Identification of rocks by giving their physical properties, classification and their civil engineering applications (5 rocks)	20 (5 x 4)
3	Dip and strike problems	6
4	Bore hole problems (3 point method)	10
5	Thickness of strata problems including calculation of vertical, true thickness and its width of out crop.	4
6	Electrical resistivity curves drawing and its interpretation for Geotechnical and Aquifer investigations.	6
7	Interpretation of Toposheets	5
8	Geological maps, their cross sections and description	10
9	Viva voce	5

Note:

- 1) Question nos. 1,2,4,5,7, 8 & 9 are compulsory.
- 2) Among question no. 3 &6 any one shall be given.
- 3) Internal Assessment Marks=20: By conducting at least one test for 10 marks and remaining 10 marks for record.

Reference Books:

1. M P Billings, Structural Geology , CBS Publishers and Distributors, New Delhi
2. B.S.Satyanarayana Swamy , Engineering Geology Laboratory Manual , Dhanpat Rai Sons, New Delhi.
3. L R A Narayan, Remote sensing and its applications, University Press.
4. P.K.MUKERJEE, Text book of Geology , World Press Pvt. Ltd., Kolkatta
5. John I Platt and John Challinor, Simple Geological Structures, Thomas Murthy & Co, London