Course Type	Course Code	Name of Course	L	T	P	Credit
DC	ESC 253	Geology Practical	0	0	2	2

Course Objective

- The identification of different types of rocks and understanding their behavior.
- To apply geologic concepts and approaches on environmental engineering projects.

Learning Outcomes

Upon successful completion of this course, students will:

- The student will be able to demonstrate the basic lab skills: identifying minerals and rocks; inferring rock origin from examination of specimens; reading, drawing and interpreting contour maps and profiles; using terrestrial coordinates.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1.	Topsheet Analysis,: Their Number, Scale and Index andPhysiographical parameters analysis through Toposheet.	2	The knowledge regarding concepts of Topsheet analysis and information regarding physiographical features and tools of the toposheet.
2.	Preparation of Contour line map (choose one suitable sector of toposheet) and demarcation of higher and lower landmarks with direction.	2	The knowledge regarding different contour map.
3.	Preparation of Drainage map of a given watershed area.	2	The information regarding different types of drainage pattern in the given watershed area.
4.	Preparation of drainage density of a given watershed area.	2	The information regarding different types of drainage pattern in the given watershed area.
5.	Preparation of watershed map and analysis of slope of sub watershed area.	2	The knowledge about watershed map and its use in watershed management and planning.
6.	Calculation of TARR value.	2	To understand the importance of total annual replenishable recharge and for assessment of groundwater utilization and its stage of groundwater development.
7.	To draw the profile/section of different beds in the given geological map.	2	To understand and to identify regions of groundwater movement, evaluate potential sites for economic mineral deposits, and locate oil and gas reservoirs.
8.	Drawing of strike line & determination of true dip & apparent dip.	2	To understand the attitude of rock layers or other planar geologic features) in constructing of accurate geologic maps and geologic cross-sections.
9.	Laboratory Study and Observations of Physical Properties of Minerals.	2	To understand the behaviour and characteristics of minerals for remediation of contaminated soils and groundwater.
10.	Study of rock specimens and its physical properties (Igneous, Sedimentary and Metamorphic rocks).	2	The knowledge about the important rocks and give idea about what the Earth was like in the past.
11.	Study through GPS- Latitude, Longitude, Elevation etc.	2	The knowledge about the latitude and longitude of any location can easily be determined.
12.	Study of Water table fluctuation through secondary data.	2	To estimate the groundwater recharge by analysis of water-level fluctuations from the observation wells.

TextBook

Textbook of Geology; G.B. Mahapatra, CBS.
Textbook of Geology; P. K. Mukherjee, World Press.

Reference book

Practical Geology; Dr. Harish Kapasya, Himanshu Publications.