



GOVERNMENT OF INDIA
GEOLOGICAL SURVEY OF INDIA TRAINING INSTITUTE
HYDERABAD



SCHEME: ITEC

PROPOSED YEAR: 2026-27

Course Name	Duration	Maximum Seats	Minimum Seats	Stream
Fundamentals of Geological Mapping and Mineral Exploration.	06-10-2026 to 19-10-2026	20	10	Engineering and Technology

COURSE DETAILS

Course Name	Fundamentals of Geological Mapping and Mineral Exploration.
Start Date	06-10-2026
End Date	19-10-2026
Aim & Objective	To enable Geoscientists and professionals to acquire knowledge of geological mapping and its importance to Mineral Exploration.
Mode of Evaluation	Project Work and Presentation
Education Qualification	Graduate in any subject in Earth Science (Geology, Geophysics, Hydrogeology, Environmental Science, Mining Geology, Geography.)
Work & Experience	Not applicable
Target Group	Scientists, Surveyors, Teachers, Technicians, etc. dealing with Geoscientific Studies / Research on Earth Resource & Utility Management

COURSE OVERVIEW

The course on “Fundamentals of Geological Mapping and Mineral Exploration” is designed to equip the participants with the key objective to understand:

- The geological principles relevant to mapping.
- Fieldwork methods to gather and record geological data.
- Analyse and interpret geological maps.
- Understand the fundamentals of mineral exploration, including techniques and tools used.
- Acquire knowledge of geological formations, structures, and the relationship to mineral deposits.
- Resource Estimation Techniques

COURSE CONTENT

- Introduction to Geological Mapping/ Field mapping Techniques: Identification of rock formations, outcrop mapping, measuring strike and dip, and recording field data.
- Understanding Geological Structures (Folds, faults, shear zone and joints): To identify geological structures and structural elements and document them in the field notes.
- Mapping of Geological Structures and interpretation of geological maps in the context of structural geology.
- Geological Mapping Data Interpretation: Processing of field data and to delineate potential mineralized zones on map
- Principles of Mineral Exploration, Key techniques and the importance of geological mapping in exploration: Detailed mapping for Deformed ore bodies and exploration strategy.
- Different Methods of Exploration: Identifying and exploring mineral deposits, from surface mapping to Subsurface exploration including the processing of geochemical, geobotanical and geophysical data and delineation of mineralized zone.
- Sampling and Data Collection: Field techniques used for sample collection, processing and preparation of representative samples.
- Surface Exploration Methods: Planning of pits/trench, channel sampling on geological map and to establish mineralized zones for subsurface exploration.
- Subsurface Exploration: Overview of drilling methods: diamond drilling, reverse circulation, and percussion drilling. Geological logging and core description: understanding alteration, mineralization, and lithology.
- Resource Estimation Techniques: Introduction to the methods for estimating mineral resources (e.g., polygonal method, block modeling, and geostatistics). Understanding the difference between inferred, indicated, and measured resources.
- A look at case studies of Indian Mineral Deposits (Field Visit): Visit to copper prospects in Rajasthan – VMS, SEDEX type Base Metal Mineralization, styles lithology and structural control, alteration pattern and exploration strategy
- Mine Visit: Introduction of mine plan, 3D ore body geometry and mine planning.
- Project work and Evaluation
