

Course Name : Three years Diploma in Mining Engineering
Year : Second
Subject Title : **ECONOMIC & FIELD GEOLOGY**
Subject Code : **M202**

Teaching and Examination Scheme:

Teaching Scheme*			Examination Scheme					
L	T	P	Full Marks	External Exam Marks	Internal Exam Marks	External Pas Marks	Total Pass Marks	Duration of External Exams
2	0	0	100	80	20	26	40	3 Hrs.
Practical (MI 209)		2	100	80	20	26	40	4 Hrs.

*Duration of year is considered 28 weeks

Material that needs to be explored comprises rocks and minerals. It is essential for engineers to have knowledge of mining geology

COURSE OUTCOMES:

After undergoing the course of study the student shall be able to

1. Identify landforms in field
2. Explain the relation of landforms for mineral deposit and mining activity
3. Outline stratigraphy of India and mineral deposits
4. Identify the fossils
5. Explain the principle of formation of mineral deposit
6. Describe mode of occurrence, distribution and uses of ores.
7. Investigate minerals in field using geological, geophysical, geochemical method of prospecting
8. Mark the mineral prospect zone using remote sensing techniques.
9. Delineate suitable site for dam and reservoir and tunnel

Unit	Content	Contact Hours	Marks
1.	Geomorphology 1.1 Definition of landform 1.2 Forces changing the landforms 1.2.1 Endogenetic 1.2.2 Exogenetic 1.3 Geomorphic agents and their landforms 1.3.1 landforms produced by mass movement		

	<p>1.3.2 Fluvial landforms 1.3.3 Aeolian landforms 1.3.4 Glacial landforms 1.3.5 coastal landforms 1.3.6 landform produced by groundwater</p>		
2.	<p>Paleontology</p> <p>2.1 Definition of fossil 2.2 Mode of preservation of fossil 2.3 Uses of fossils 2.4 Classification of animal and plant kingdom 2.5 Morphology and geological range of occurrence of animal fossils - order Foraminifera (Phylum protozoa), class corals (phylum Coelenterata), phylum brachiopoda, class gastropoda (phylum mollusca and class trilobite 2.6 Morphology and geological range of occurrence plant fossils - Glassopteris, Gangamopteris, Ptilophyllum</p>		
3.	<p>Stratigraphy</p> <p>3.1 principles of stratigraphy 3.2 Standardized stratigraphic and time scale 3.3 Tectonic divisions of India 3.4 Stratigraphy of India 3.4.1 Stratigraphic succession, lithology, distribution and economic mineral deposits of Precambrian basement in Singhbhum and Dharwar, 3.4.2 Stratigraphic succession, lithology, distribution and economic mineral deposits of Cuddapah supergroup, Vindhyan supergroup and Gondwana supergroup</p>		
4.	<p>Economic Geology</p> <p>4.1 Definition of ore, gangue, tenor 4.2 process of formation of ore deposits 4.3 morphology of principal type of ore deposits 4.4 Classification of ore deposits 4.5 Origin, mode of occurrence, distribution and uses of gold, iron, copper, manganese, chromium, Aluminum, Pb, zinc and petroleum 4.6 Metallogenic provinces of India 4.7 ore deposit through geological time in India</p>		
5.	<p>Exploration & Prospecting</p> <p>5.1 definition of prospecting and exploration 5.1.1 Geophysical prospecting 5.1.2 Geochemical prospecting 5.1.3 Geobotanical prospecting</p>		

	5.2 Remote sensing techniques for exploration		
6.	Engineering Geology 6.1 Geological investigation for site selection of dam and reservoir, tunnel, hill slope and rock cutting		
7.	Geology Mapping 7.1 Features of geological maps 7.1.1 topography 7.1.2 lithology 7.1.3 geological structure 7.1.4 signs and symbols 7.2 field equipment For geological mapping 7.3 features of toposheet 7.3 Method of collection of sample 7.4 completion and tracking of outcrop		

PRACTICAL:

1. Outcrop map preparation and interpretation. (Any Ten including Horizontal, Vertical and Inclined/Fault & fold outcrop)
2. Toposheet interpretation and preparation of geological map on toposheet (Jharia, Raniganj and Rajmahal coal fields)
3. Identification of ore mineral”: Galena, Chalcopyrite, Magnetite, Hematite)
4. Identification of fossils : Trinobite, Gastropods, Glassopteris, Gangamopteris, foraminifera.
5. Identification of landforms in satellite image : Fluvial, Aeolian, Glacitr, Landform.
6. Interpretation of satellite image for Demarcation of outcrops of Vindhyan Supergroup, Cuddapah Supergroup, Singhbhum group on it

STRATEGY OF IMPLEMENTATION:

Conducting theory classes, practical, Industrial visits, seminars, group discussion, and assignment on different topics shall complete the curriculum for the subject.

REFERENCE BOOKS:

Author	Title	Publisher
Praveen Singh	Engineering and General Geology	Catson Educational Series
Umeshwar Prasad	Economic Mineral Deposit	CBS Publisher, New Delhi
D K Todd	Ground Water Hydrology	Willey and Sons, New York

K R Karanth	Hydrology	Tata Mcgraw Hills, New Delhi
P.K. Mukherjee	A text book of Geology	The world press pvt. Ltd. Calcutta.
A Laberson	Geology of Petroleum	
M B Dobrine	Introduction of Geophysical Prospecting	Mcgraw Hills
F.H. Lahee	Field Geology	