Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NGLC528	**Exploration Geology and Mineral Economics**	3	0	0	3

Course Objective

The primary objective of the course is to introduce the fundamental aspects of exploration strategies followed in Greenfield and Brownfield exploration. Different sampling methodologies and resource methodologies are basic ingredients of the course. Apart from the basic exploration technique, the economic evaluation is done before mining.

Learning Outcomes

Upon completion of the course, students will be able to:

- Understand the different approaches of mineral exploration using different tools.
- Can build up confidence in sampling and reserve estimation.
- Mineral economics of a deposit need to be understood by different methodologies.

Unit No.	Topics to be Covered	Lecture Hours	Learning Outcome
1	**Methods of Geological Prospecting and Exploration:** Principles and concepts of mineral exploration, methods of Prospecting and Exploration. Different Stages of mineral Exploration. Radiometric survey. Remote sensing in mineral exploration.	8	Understand the different approaches of mineral exploration using different tools.
2	**Sampling and Subsurface exploration:** Sampling theory, objectives and methods. Exploration drilling technique, planning, drill core logging and sampling. Planning of the Geological plans and sections for ore body evaluation.	6	Basic concept of sampling drilling and ore body evaluation.
3	**Reserve Estimation:** Cut-off grade concepts and applications, Reserve Estimation– principles, practices and different conventional methods.	4	Principle and practices of ore reserve evaluation.
4	**Principles of Geochemical Exploration:** Geochemical cycle, geochemical mobility and association of elements. Primary and secondary dispersions of elements; Determination of background, and geochemical anomalies; Pathfinder and target elements for geochemical exploration.	4	Basic concept of geochemical exploration.
5	**Geochemical methods of mineral exploration:** Methods of geochemical explorations, Procedures for geochemical sampling; Interpretation of geochemical surveys.	6	Methods of geochemical explorations.
6	**Mineral Economics** **World resources of minerals:** Classification of mineral resources with special reference to UNFC and JORC schemes. Mineral markets, Import-Export policies and International Trade. Demand analysis of minerals, Royalty and Taxes. India's status in mineral production.	6	Mineral Economics and world resources of minerals.
7	**Mineral Policies and Regulations:** International and national mineral policies. Mines and Mineral policies. Mines and Minerals (Development and Regulation) act. Marine and mineral resources and laws of sea.	4	National and International mineral policy and regulations.
8	**Economics of Deposit:** Economic evaluation of mineral deposit.	4	Economics of mineral deposits and mineral conservation.

	Mineral conservation: Methods of mineral conservation and substitution		
	Total Classes	42	

Reference Books:

1. Reedman, J H. Techniques in Mineral Exploration: 1979. Applied Science Publishers Ltd., UK.
2. Peters, W.C. Exploration and Mining Geology (2nd Ed.); 1987. John Wiley & Sons, New York.