

Course Type	Course Code	Name of Course	L	T	P	Credit
DE	NMED542	Crushing Screening and Conveying of Critical Minerals	3	0	0	3

Course Objective

The primary objective of the course is to introduce the fundamental concepts related to crushing, screening and conveying with specific reference to the beneficiation of critical minerals.

Learning Outcomes

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

- Understand the different mechanisms of crushing, screening and conveying methods.
- A detailed understanding the primary level of critical mineral handling processes

Unit No.	Topics to be Covered	*Lecture Hours	Learning Outcome
1	Introduction to Crushers Introduction to Crushers, Crushing equipment, Crushing Mechanism	03	Deals with introduction to crushers
2	Types of Crushers Classes of Crushers, Jaw Crushers, single toggle and double toggle crushers, Gyratory crushers, Cone crushers, Impact Crushers, Track-mounted crushers, portable crushers	04	To learn types of crushers and their mechanisms
3	Stages of Crushing Primary crushing, secondary crushing, fine crushing, reduction ratio, Crusher selection method, capacities of different crushers,	03	To comprehend the different stages of crushing in mineral processing industries
4	Grinding Mills Grinding Mills, Ball Mills, hammer mills, Tube Mills,	03	Deals with different types of Grinding mills
5	Applications for beneficiation Specific applications for crushing and milling critical minerals	03	To understand the applications of crushing and milling
6	Introduction to Conveyors Introduction, Conveying mechanism, Purpose	03	To comprehend the role of conveyors
7	Classes of Conveyors (basis of belt materials) Rubber Belt conveyors, Ester Poly amide Belt Conveyors, Steel cord belt Conveyors, Nylon Belt Conveyors,	03	To acquire the knowledge about the classes of conveyors based on belt materials
8	Classes of Conveyors (based on operations) High angle conveyors, Pipe conveyors, specific application for conveying critical minerals	03	To acquire the knowledge about the classes of conveyors based on operational procedures
9	Applications of Conveying specific application for conveying critical minerals	03	To understand the applications of conveying process
10	Introduction to Screening Introduction to screens for mineral beneficiation, size and specifications	03	To get exposure about the functions of screens
11	Classes of Screens Trommels, vibrating screens, screening efficiency, different classes of feeders, Mobile screens	04	To know the types of screens used in mineral handling industry

13	Identification Microscopy for identification of critical minerals, mesh size and their role in mineral beneficiations	04	To know about the microscopic identification of the critical minerals
14	Washeries Washeries for critical minerals, magnetic separations	03	To learn about the functioning of the washeries related to beneficiation
	Total classes	42	

Text Book : 1. Materials Handling Equipment, Alexandrov
2.A. F. Taggart, "Handbook of Mineral Dressing," John Wiley & Sons, New York,

Reference Book :
1. Crushing and screening Handbook, Mesto 7th Edition.
2. Handling of Bulk Solids, Theory and Practice By P. A. Shamlou