4th Semester	RMN4D001	Mineral Processing	L-T-P 3-0-0	3 CREDITS

Module-I (9 Hours)

Introduction to mineral beneficiation, sampling, liberation studies and its importance.

Comminution: Fundamentals of comminution, crushing -- construction and operational features of jaw, gyratory, cone and roll crushers.

Grinding: Theory of ball mill, rod mill, critical speed of the mill, open circuit and closed circuit, circulating load.

Module-II (9 Hours)

Size separation: Sieving and screening, laboratory sizing and its importance, representation and interpretation of size analysis data, industrial screening.

Classification: Movement of solids in fluids, free setting and hindered settling of particles, different types of classifiers, e.g. sizing and sorting classifiers used in mineral industry.

Module-III (11 Hours)

Concentration: Gravity separation, concentration criteria, jigging, flowing film concentration and tabling, dense media separation.

Froth flotation: Theory, reagents used in floatation processes, machines and practice.

Magnetic and electrostatic separation: Theory and application of magnetic and electrostatic separation techniques in mineral industry.

Dewatering and drying: Theory and practice of thickening; filtration and drying.

Module-IV (9 Hours)

Flow sheets: Typical flow sheets for beneficiation of iron, gold, copper, lead-zinc sulphide ores, rock phosphate, beach sand, uranium and other industrial minerals.

Module-V (7 Hours)

Agglomeration techniques: Sintering, palletizing, briquetting and their applications in ferrous and non-ferrous metal industries, testing of agglomerates. Important mineral deposits in India.

Books:

- Principle of Mineral Dressing by A. M. Gaudin.
- Element of Ore Dressing by A.E. Taggart.
- Text Book of Ore Dressing by R. H. Richards and C. E. Locks.
- Textbook of Ore Dressing by S.J. Trusscott.
- Ore Dressing by S.K. Jain.
- Mineral Processing Technology by Berry A Willis.