

3 rd Semester	RML3C002	Introduction to Mineral Processing	L-T-P 3-0-0	3 CREDITS
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Module – I (08 hours)

Fundamentals of ore dressing, Metal production flow sheet, Definition of Mineral, Ore and gangue, Economics of mineral processing, grade and recovery, grade-recovery curve, Henry curve, Mayer curve, Dell curve, Upgradability, Metallurgical efficiency, Liberation, degree of Liberation.

Module –II (10 hours)

Important Unit operations:

Comminution: Principle and Laws of comminution, different size reduction units.

Size separation: Principle and different techniques. Classification: Principle and types. Comminution and sizing as upgradation of minerals.

Module – III (09 hours)

Different ore up gradation techniques, Physical separation, magnetic and electrostatic separation, chemical separation processes, mass balances (Two and three product system).

Module – IV (09 hours)

Dewatering operation: Principle and types, Waste disposal, Environmental issues related to mineral processing. Flocculation, coagulation, and oil-agglomeration.

Module – V (09 hours)

Basic concept of metallurgy, different types of metallurgical processes (pyro, hydro & electro metallurgy). Roasting, smelting, converting, leaching, precipitation processes. Faraday's laws, electro winning and refining. Dewatering operation: Principle, Flocculation, coagulation and oil-agglomeration. Waste disposal, Environmental issues related to mineral processing.

Books:

- Mineral Processing Technology by B.A. Wills and Tim Napier-Munn
- Principles of Mineral Dressing by A. M. Gaudin– McGraw Hill Book Company, 1971
- Jain, S.K., Ore Processing, Oxford – IBH Publishing, 1984
- Taggart, A.F., Handbook of Mineral Dressing, John Wiley and Sons, New York, 1990.
- Wills, B.A. Mineral Processing Technology, Pergamon Press, 1985. 5. Vijayendra, H. G., Handbook on Mineral Dressing, Vikas Publishing House Pvt. Ltd. 1995.