

4 th Semester	RML4C002	Size Reduction and Separation	L-T-P 3-0-0	3 CREDITS
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Module-I (08 Hours)

Laboratory screening: mesh, test sieves: Tyler, ASTM and other series, sieve analysis. Industrial screening: Fundamentals of screening, dry and wet screening, Classification of screens and their construction, operation and maintenance of different types of industrial screens. Screen efficiency, Pre-scrubbing and other processes to improve screening efficiency.

Module-II (10 Hours)

Comminution: Principles and theories, Forces in comminution, Empirical evaluation of size reduction, Bond's, Kick's and Rittengers theory, particle disintegration. Kinetics of crushing and grinding.

Module-III (10 Hours)

Crushing: construction, operation and maintenance of crushers such as Jaw, Gyratory, Cone, Roll crusher, Hammer mills, optimization of crushing circuits, High compression rolls: their construction, operation maintenance and performance aspects. In-pit and portable crushers.

Module-IV (10 Hours)

Grinding: Grinding mills principles, construction and their operation, Mill liners, Feed entry, and product discharge mechanisms. Open and closed-circuit grinding: Ball, Rod, Pebble, Autogenous and Fluid energy mills. Application of these mills for specific processing requirements: Effect of process parameters on mill performance. Closed & open circuit grinding optimization.

Module-V (08 Hours)

Classification: Principle, introducing to different types of classifiers used in mineral industry; their construction and maintenance Hydrocyclones: Principle, construction, operation, maintenance. Efficiency of classifiers.

Books:

- Mineral Processing Technology by B.A. Wills and Tim Napier-Munn
- Principle of Mineral Processing Edited by Maurice C. Fuerstenau and Kenneth N. Han
- Jain, S.K., Ore Processing, Oxford – IBH Publishing, 1984.
- Gaudin, A.M., Principles of Mineral Dressing – McGraw Hill Book Company, 1971.