

5th Semester	RML5D004	Material Handling Systems	L-T-P 3-0-0	3 Credits
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Module I: (8 Hours)

Introduction to material handling, Different principles associated with material handling, Unit load concept, Weighing systems, Properties of bulk material as a function of size distribution, Characterization of bulk materials

Module II: (8 Hours)

Design of storage system: Silos, bins & hoppers, different modes of feeding systems, gates, chutes. Basic calculation on the selection of storage devices

Module III: (8 Hours)

Classification of material handling equipment, Conveying systems, classification and types, Pneumatic and hydraulic conveying, Design, operation & maintenance aspect of various conveying systems, their selection & application. Process control & instrumentation for conveying systems

Module IV: (8 Hours)

Loading & unloading systems, hoisting equipment, Rapid loading system, Merry-go-round systems Stacking, blending & reclaiming of bulk materials

Module V: (8 Hours)

Designing of bulk material handling plants, Plant layout. Automation & on-line monitoring of bulk material handling system, Robotic Handling

Books:

- [1] Siddhartha Ray, Introduction to materials handling, New age international (p) limited publishers
- [2] Raymond A. Kulwicz, Material Handling Handbook, John Wiley and Sons
- [3] Don McGlinchey, Bulk Solids Handling: Equipment Selection and Operation, Blackwell Publishing Ltd