

COURSE TITLE : MATERIAL HANDLING
COURSE CODE : 5019
COURSE CATEGORY : E
PERIODS/WEEK : 4
PERIODS/SEMESTER : 72
CREDITS : 0

TIME SCHEDULE

MODULE	TOPICS	PERIODS
1	Introduction to material handling systems Mechanisms used in material handling systems Selection of material handling equipments	18
2	Components material handling system	16
	TEST I	2
3	Hoisting machinery and equipments	16
4	Conveying machinery & Surface transport equipments	18
	TEST II	2
	Total	72

OBJECTIVES

Up on completion of the study of the subject the student will be able to

1. Know the control and safety measures incorporated on material handling equipments.
2. Identify, compare and select proper material handling equipment for specific applications.
3. Know the operational features of various material handling system used in industries.
4. Appreciate the role of material handling devices in mechanisation and automation..

CONTENT DETAILS

MODULE – I

Introduction to material handling systems- Types of load to be handled- Types of movements- methods of stacking, loading and unloading systems- principles of material handling systems- hoisting mechanism- lifting mechanism- traveling, slewing mechanism- cross and traverse mechanism

Factors effecting choice of material handling equipments such as type of loads, hourly capacity, direction and length of travel, method of stacking at initial intermediate and final points- specific load conditions and economics of material handling systems.

MODULE – II

Components of material handling systems

Flexible hoisting appliances such as welded chains, roller chains, hemp ropes, steel wire ropes, fastening methods of wire and chains, eye bolts, lifting tackles, lifting and rigging

Load handling attachments

Various types of hooks- forged, eye hook.

Appliances for suspending hooks- crane grab for unit and piece loads- electric lifting magnet, vacuum lifter, grabbing attachment for loose materials, crane attachment for handling liquids / molten metals.

Arresting gear and brakes.

Arresting gear- construction and working, construction and use of electromagnetic shoe brakes, thruster operated shoe brakes, control brakes.

MODULE – III

Hoisting machinery and equipments.

Working of different type of hoists such as lever operated hoist, portable hand chain hoist, differential hoist, worm geared and spur geared hoist, electric and pneumatic hoists

Working of different type of cranes such as rotary cranes, trackless cranes, mobile cranes, bridge cranes, cable cranes, floating cranes and cranes traveling on guide rails.

Working of elevating equipments such as stackers, industrial lifts, freight elevators, passenger lifts, mast type elevators, vertical skip hoist elevators.

MODULE – IV

Conveying machinery.

Working of traction type conveyors such as belt conveyors, chain conveyors, bucket elevators, escalators. Working of traction less type conveyors such as gravity type conveyors, vibrating and oscillating conveyors, screw conveyors, pneumatic and hydraulic conveyors, hoppers, gates and feeders.

Surface transport equipment – functions – working of trackless equipment such as hand operated trucks, powered trucks, tractors, AGV (Automatic Guided vehicle), industrial trailers

Function, working of cross handling equipment such as winches, capstans, turntables, transfer tables, monorail conveyors.

TEXT BOOKS

1. Material Handling Equipment – N.Rundenko (Peace Publisher, Moscow)
2. Material Handling Equipment -M.P. Alexandrow(MIR Publishers, Moscow)
3. Material Handling Equipment -R.B. Chowdary & G.N.R.Tagore (Khanna Publishers,Delhi)
4. Material Handling (Principles &Practice)-Allegri T.H(CBS Publisher, Delhi)
5. Plant layout & Material Handling- Apple J.M (John Wiley Publishers)
6. Material Handling - Immer J.R (McGraw Hill, Newyork)
7. Material Handling Equipment - Parameswaran M.A (CDC in Mech. Engg., I.I.T. Chennai).