

Subject Code: 01ME0606

Subject Name: Design of Material Handling Equipment

B.Tech. III Year (Sem.- VI) Mechanical Engineering

Type of course: Under Graduate

Prerequisite: Mechanics of Solid, MDID, Machine Design - I, Machine Design - II

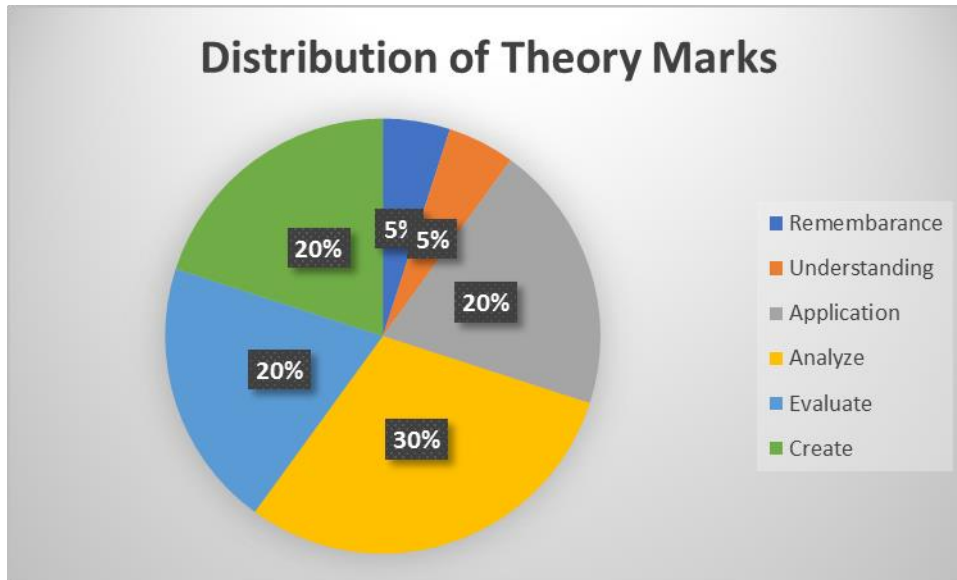
Rationale: The course aims to provide fundamental knowledge of Material Handling Equipment. Design and analysis of Hoisting Equipment's Like, Rope, Drum, Hook, Chain, Pulley and Girder etc. and design of arresting gear, Conveyors and Elevators.

Teaching and Examination Scheme:

Teaching Scheme			Credit	Examination Marks					Total Marks
L	T	P		Theory Marks			Practical Marks		
			ESE (E)	IA	CSE	Viva (v)	Term work TW		
3	0	2	4	50	30	20	25	25	150

Content:

Sr. No	Course content	Total Hrs	% Weightage
1.	Materials Handling Equipment: Introduction to material handling Equipment, Detail classification of MHE, Application and their selection.	3	10
2.	Design of Hoists: Design of hoisting Equipment likes: Wire and Hemp Rope, Welded and roller chains. Design of ropes, pulleys, Pulley systems, Sprockets and drums, Load handling attachments. Design of Hooks: forged hooks and eye hooks, Girder Design, Crane grabs, Grabbing attachments, Design of arresting gear.	18	40
3	Conveyors: Classification of Conveyors, Design and applications of Belt Conveyors, Apron Conveyors and Escalators Pneumatic Conveyors, Screw conveyors and vibratory conveyors.	12	30
4	Elevators: Design of Bucket elevators: Loading and bucket arrangements, Cage elevators, Shaft way, Guides, counter weights.	9	20



Reference Books:

1. Material Handling Equipments by Rudenko, MIR Publishers
2. Alexandrov M., "Materials Handling Equipments", MIR Publishers, 1981.
3. Spivakovskii, "Conveyors and related equipments". MIR publishers.
4. ASME, "Materials Handling Handbook", Wiley -Interscience, 1985
5. Spivakovsy A.O. and Dyachkov V K, "Conveying Machines", Volume I and II, MIR Publishers, 1985
6. Tech P S G, "Design Data Book", Kalaikathir Achchagam, Coimbatore, 2003

Practical: Design based Problems (DP)/ Open Ended Problem:

- Major Project: Design of hoisting equipment including assembly and detailed drawings.

Course Outcome:

After learning the course, the students should be able to:

- Understand the basic Fundamentals of Material Handling Equipment.
- Design various hoisting elements like, chains, Hemp and wire ropes, Pulley systems, Sprockets & drums, forged hooks and eye hooks and Girders.
- Design a Conveyors and Selection based on the Application.
- Design of Bucket and Cage Elevator.