

B.E Semester: 7 Mechanical Engineering
Subject Name: Design of Material Handling Equipment (ME703-N-E)
[Dept. Elect.-3]

A. Course Objective:

- 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.

B. Teaching / Examination Scheme:

Teaching Scheme				Total Credit	Evaluation Scheme					
L	T	P	Total		Theory		Mid Sem Exam	CIA	Pract.	Total
Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	Marks
3	0	2	5	4	3	70	30	20	30	150

C. Detailed Syllabus:

Unit No.	Details
1	Materials Handling Equipment: Introduction to material handling Equipment, Detail classification of MHE, Application and their selection.
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.
3	Conveyors: Classification of Conveyors, Design and applications of Belt Conveyors, Apron Conveyors and Escalators Pneumatic Conveyors, Screw conveyors and vibratory conveyors.
4	Elevators: Design of Bucket elevators: Loading and bucket arrangements, Cage elevators, Shaft way, Guides, counter weights.

Total hours (Theory):48

Total hours (Practical):32

Total hours:80

D. Lesson Planning:

Sr. No.	Date/Week	Unit	Weight age	Topic No
1	1 st ,2 nd ,3 rd	Unit 1	20%	1
2	4 th .5 th ,6 th ,7 th , 8 th ,9 th	Unit 2	40%	2

3	10 th .11 th . 12 th	Unit 3	20%	3
4	13 th , 14 th ,15 th ,16 th	Unit 4	20%	4

E. Instructional Method & Pedagogy

1	At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
2	Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal Weight age should be given to all topics while teaching and conduction of all examinations.
3	Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
4	One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
5	Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
6	Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.
7	The course includes a laboratory, where students have an opportunity to build an appreciation for the concept being taught in lectures. Suggested list of experiment is given below
	Design based Problems (DP)/ Open Ended Problem: Major Project: Design of hoisting equipment including assembly and detailed drawings.

F. Students Learning Outcomes:

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

G. Text Books & 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