

## **ED5091 DESIGN OF MATERIAL HANDLING EQUIPMENTS**

### DETAILED SYLLABUS

#### **OBJECTIVES**

To impart students on the need, use, application and design of different material handling techniques, equipments and machines used in common use and in industrial sector

#### **UNIT I MATERIALS HANDLING EQUIPMENT**

Types, selection and applications

#### **UNIT II DESIGN OF HOISTS**

Design of hoisting elements: Welded and roller chains - Hemp and wire ropes - Design of ropes, pulleys, pulley systems, sprockets and drums, Load handling attachments. Design of forged hooks and eye hooks – crane grabs - lifting magnets - Grabbing attachments - Design of arresting gear - Brakes: shoe, band and cone types.

#### **UNIT III DRIVES OF HOISTING GEAR**

Hand and power drives - Traveling gear - Rail traveling mechanism - cantilever and monorail cranes - slewing, jib and luffing gear - cogwheel drive - selecting the motor ratings.

#### **UNIT IV CONVEYORS**

Types - description - design and applications of Belt conveyors, apron conveyors and escalators Pneumatic conveyors, Screw conveyors and vibratory conveyors.

#### **UNIT V ELEVATORS**

Bucket elevators: design - loading and bucket arrangements - Cage elevators - shaft way, guides, counter weights, hoisting machine, safety devices - Design of fork lift trucks.

#### **REFERENCES**

1. Alexandrov, M., Materials Handling Equipments, MIR Publishers, 1981.
2. Boltzharol, A., Materials Handling Handbook, The Ronald Press Company, 1958.
3. Lingaiah. K. and Narayana Iyengar, "Machine Design Data Hand Book", Vol.1 & 2, Suma Publishers, Bangalore, 1983
4. P.S.G. Tech., "Design Data Book", Kalaikathir Achchagam, Coimbatore, 2003.
5. Rudenko, N., Materials handling equipment, ELNvee Publishers, 1970.
6. Spivakovsy, A.O. and Dyachkov, V.K., Conveying Machines, Volumes I and II, MIR Publishers, 1985.