

# GUJARAT TECHNOLOGICAL UNIVERSITY

## B. E. SEMESTER: V INDUSTRIAL ENGINEERING

Subject Name: **Facilities Layout and Material Handling Systems**

Subject Code: **151503**

| Teaching Scheme |          |           |       | Evaluation Scheme                  |                                 |                  |
|-----------------|----------|-----------|-------|------------------------------------|---------------------------------|------------------|
| Theory          | Tutorial | Practical | Total | University Exam<br>(Theory)<br>(E) | Mid Sem Exam<br>(Theory)<br>(M) | Practical<br>(I) |
| 4               | 0        | 2         | 6     | 70                                 | 30                              | 50               |

| Sr. No. | Course content   |
|---------|--|
| 1.      | <b>Plant location :</b><br>Selection of territory, Choice of site, Pitfalls in selection of site location, Economic versus social significance, Optimum production – distribution cost, Plant location analysis for different types of industries.   |
| 2.      | <b>Plant Layout:</b><br>Objectives of plant layout, Types of plant layout, Factor influencing layout plants, Basic principles of plant layout prerequisite to plant layout process, Workstation layout, Use of travel chart in plant layout, Symptoms of poor layout, Technique and procedure to determine plant layout.   |
| 3.      | <b>Material Handling:</b><br>Introduction to material handling, Manual and mechanical handling, Handling ratio, Effects of handling on productivity, Basic principles of material handling, Analysis of material handling problem, Organizing for material handling, Analysis of cost of material handling, Basic types of material handling equipments and its characteristic, Uses and limitations, Stability of forklift trucks, Selection of material handling equipment, Unit load handling, Palletizing & packaging. |
| 4.      | <b>Design of Handling system:</b><br>a. Capacity calculation for belt conveyor, Screw conveyor and bucket elevators, etc.<br>b. Block design, Wire rope selection for hoists and elevators belt conveyer, Screw conveyor and electric over head traveling crane system design approaches.  |

**Term Work:**

The term work will be based based as per the syllabus prescribed.

**Practical/Oral:**

Based as per the syllabus prescribed.

**Reference Books:**

1. Plant layout and material handling by Apple.
2. Material Handling system design by Apple.
3. Plant layout and design by James M. Moore.
4. Practical plant layout by Multher.
5. Material Handling by Allaxander.
6. Material Handling equipment by N. Rudenko.
7. Material Handling by Immer.
8. Layout planning technique by Immer.