3/4 B.Tech. SIXTH SEMESTER

ME6T5 INDUSTRIAL ENGINEERING & MANAGEMENT Credits: 4

Lecture:- 4 periods/week **Internal assessment: 30marks**
Practice: -- **Semester end examination: 70 marks**

Objectives:

1. Understand fundamental functions of management
2. Get the knowledge of choosing best location for plants.
3. Know the application of tools of operation management.
4. Identify the statistical techniques to improve the quality

Learning outcomes:

At the end of course the students will be able to:

1. Describe the role and responsibilities of management in organization
2. Differentiate the structures of various organization systems
3. Demonstrate the leadership qualities.
4. Solve operations and project management problems
5. Apply different quality control techniques

Pre-Requisites:

Engineering Economics

UNIT-I

DEFINITION OF INDUSTRIAL ENGINEERING:

Applications, Role of Industrial Engineer, Differences between production management and IE, Quantitative tools of IE, Concepts of Management– Functions of Management – Evolution of Management Thought: Taylor's Scientific Management, Fayol's Principles of Management, Douglas Mc-Gregor's Theory X and Theory Y, Hertzberg's Two Factor Theory of Motivation, Maslow's Hierarchy of Human Needs

UNIT-II

DESIGNING ORGANISATIONAL STRUCTURES:

Basic concepts related to Organisation - Departmentation and Decentralization, Types of mechanistic and organic structures of organisation (Line organization, Line and staff organization, functional organization, Committee organization, matrix organization, Virtual Organization, Cellular Organisation, team structure, boundaryless organization, inverted pyramid structure, lean and flat organization structure) and their merits, demerits and suitability.

UNIT–III

LEADERSHIP:

Introduction, Defnition, Types of leadership based on authority- their area of applicability and suitability, advantages and limitations, Traits approach to leadership

UNIT–IV

PLANT LOCATION:

Definition, factors affecting the plant location, comparison of rural and urban sites. Plant Layout – definition, objectives, types of production, types of plant layout – various data analyzing forms-travel chart.

UNIT-V

WORK STUDY:

Definition, objectives, method study - definition, objectives, steps involved- various types of associated charts-out line process charts, flow process charts, two handed process charts and simo charts- difference between micromotion and memomotion studies.

UNIT-VI

WORK MEASUREMENT-

Definition, time study, steps involved-equipment, different methods of performance rating- allowances, standard time calculation.

UNIT–VII

INTRODUCTION TO PERT / CPM:

Project management, network modeling-probabilistic model, various types of activity times estimation-programme evaluation review techniques- Critical Path-probability of completing the project, deterministic model, critical path method (CPM)-critical path calculation-crashing of simple of networks.

UNIT-VIII

INSPECTION AND QUALITY CONTROL:

Types of inspections - Statistical Quality Control-techniques-variables and attributes-a ssignable and non assignable causes- variable control charts, and R charts, attributes control charts, p charts and c charts. Acceptance sampling plan- single sampling and double sampling plans-OC curves. Introduction to TQM-Quality Circles, ISO 9000 series procedures.

Learning resources

Text books:

1. Manufacturing Organization and Management, (2nd Edition) by Amrine, Pearson, , 2004.
2. Industrial Engineering and Management, by O.P. Khanna, DhanpatRai publications.

Reference books:

1. Management, (6th Edition), by Stoner, Freeman, Gilbert,Pearson Education, New Delhi, 2005.
2. Production and Operations Management, by PannerSelvam, PHI, 2004.
3. Reliability Engineering & Quality Engineering, by Dr. C. Nadha Muni Reddy and Dr. K. Vijaya Kumar Reddy, “”,Galgotia Publications, Pvt., Limited.
4. Motion and Time Studies, by Ralph M Barnes,John Wiley and Sons, 2004.
5. Operations Management, by Chase, Jacobs, Aquilano, TMH 10th Edition, 2003.
6. PERT / CPM, by L.S.Srinath, affiliate East-West Press, New Delhi, 2000.
7. Human Resource Management, by Gary Dessler, Pearson Education Asia, 2002.
8. Marketing Management , by Phillip Kotler, Pearson, 2004.