

# 16ME401 INDUSTRIAL ENGINEERING AND PRODUCTION MANAGEMENT

Hours Per Week :

L	T	P	C
3	1	-	4

Total Hours :

L	T	P	WA/RA	SSH/HSB	CS	SA	S	BS
45	15	-	20	40	5	5	5	3



## Course Description and Objective:

This course offers the concepts of various types of manufacturing systems, productivity and various layouts used in shop floors. The objective of this course is to emphasize the importance of various production planning control parameters and their applications used in industries.

## Course Outcomes:

The student will be able to:

- understand the basics about managerial aspects of operations and production systems.
- implement production planning activities in industries.
- perform the concept of capacity and aggregate planning.
- understand the types of inventory models.

## SKILLS:

- ü Describe and evaluate the social and economic environment of business.
- ü Implement decision support tools for the growth of an organization.
- ü Apply inventory management and its importance in organizations.
- ü Design logical ability and concept of product and process layouts
- ü Apply effective project management techniques.

**UNIT - 1****L-9; T-3**

**INTRODUCTION TO INDUSTRIAL ENGINEERING:** Introduction to IE and PM; Types of Manufacturing Systems-Job Order Production; Batch Production; Mass Production- Characteristics; Advantages; Disadvantages

**PRODUCTIVITY:** Definition; Measurement of Productivity; Factors affecting Productivity; Importance of Productivity Introduction to Plant Layout- Objectives of Plant Layout; Principles of Plant Layout;

**PPC:** Definition; Objectives; Functions.

**UNIT - 2****L-9; T-3**

**PLANNING FOR PRODUCTION:** Aggregate Planning-Definition; Pure strategies in Aggregate Planning

**MRP:** Introduction; Objectives of MRP; Inputs to MRP; Outcome of MRP; Calculation(EOQ Method)

**DEMAND FORECASTING:** Definition; Need of forecasting; Forecasting Methods(Qualitative Methods and Quantitative Methods)-Least square method; Moving average method; Exponential Smoothing Method; Forecasting Errors.

**UNIT - 3****L-9; T-3**

**INVENTORY MANAGEMENT:** Inventory management - Functions of inventories - relevant inventory costs; EOQ model (Purchase and production models without shortages) - Single and multiple Price breaks without shortages-Simple problems on the above concepts.

**INVENTORY CONTROL TECHNIQUES:** ABC analysis (Calculations); VED analysis; Difference between ABC and VED analysis Technique.

**UNIT - 4****L-9; T-3****LINE BALANCING AND PROJECT MANAGEMENT**

**ASSEMBLY LINE BALANCING:** Definition; Advantages and RPW method; Problems.

**NETWORK ANALYSIS:** Activity analysis; Network construction; Critical path method (CPM); Programme Evaluation Review Technique (PERT).

**UNIT - 5****L-9; T-3****STATISTICAL QUALITY CONTROL**

**INTRODUCTION:** Quality; Control; Inspection; Quality Control-Importance and Objectives of QC; Seven tools for Quality Control(1. Pareto charts 2. Check sheets 3. Cause and effect diagram 4. Scatter diagrams 5. Histogram 6. Graphs or flow charts 7. Control charts)

**STATISTICAL PROCESS CONTROL:** Control charts for variables ( $\bar{X}$  Chart; R Chart); Attribute Control Charts(P Chart;C Chart)

**TEXT BOOKS:**

1. Joseph Monks, "Operations Management", 3<sup>rd</sup> edition, Tata McGraw Hill, 2005.
2. S.N. Chary, "Production and Operations Management", 4<sup>th</sup> edition, Tata McGraw Hill, 2009.

**REFERENCE BOOKS:**

1. R. Panner Selvam, "Production and Operations Management", 2<sup>nd</sup> edition, Prentice Hall of India, 2009.
2. Martand Telsang, "Industrial Engineering and Production Management", 2<sup>nd</sup> edition, S.Chand and Co., 2009.
3. Samuel Eilon, "Elements of Production Planning and Control", 1<sup>st</sup> edition, Universal Book Publishers, 2004.