



Semester: IV	
Course Name: Production & Operations Management	
Course Type: Minor	Course Code: B2BMS2343
Credit: 4	Full Marks: 100

LEARNING OBJECTIVES:

The present course comprises the following objectives:

- Gain a comprehensive understanding of production and operations management principles, including advanced planning, control strategies, and scope.
- Master decision-making skills for optimal plant location, layout planning, and capacity analysis, alongside integrating production processes and technologies.
- Acquire expertise in forecasting, scheduling techniques, and maintenance management, enriched with lean production and waste elimination strategies.
- Develop proficiency in ensuring product quality through statistical quality control and enhancing productivity with work-study techniques.

LEARNING OUTCOMES:

On successful completion of the course, the learner will be able to:

- Understand and apply the foundational concepts of Production and Operations Management, including planning, control, and capacity planning, along with the strategic scope and trends in the field.
- Make informed decisions on plant location and layout and select appropriate production processes to meet specific volume and variety requirements, integrating facility objectives and layout planning principles.
- Utilize forecasting techniques and scheduling tools effectively for operational efficiency and implement maintenance management strategies to ensure continuous production operations.
- Improve productivity through work-study techniques and ensure product quality by applying statistical quality control principles, including using control charts for process monitoring.

DETAILED SYLLABUS:

Unit 1: Introduction to Production & Operations Management (8L)

- Introduction to Production & Operations Management: Definition, Need, Scope
- Key decisions of Production & Operations Management
- 5 Ps of Production Management
- Trends in production/operations management (Case Study Based)
- Operation Strategies – Definition, relevance, strategy formulation process
- Order qualifying and order winning attribute: Concept & Cases

Unit 2: Production Planning & Control (6L)

- Production Planning and Control: Concept, Functions of Production Planning and Production Control
- Capacity Planning: Definition, measures of capacity (input and output)
- Basic Concepts of MRP I & MRP II, MPS

Unit 3: Plant Location & Layout (8L)

- Location Decisions & Models: Facility Location – Objective, factors that influence location decision
- Location evaluation methods- factor rating method.
- Layout Decision: Layout planning – Objectives of good layout, importance
- Different types of layouts (Process, Product, Group technology, fixed position layout).

Unit 4: Production Process (8L)

- Process Selection: Definition, Characteristics that influence the choice of alternative processes (volume and variety)
- Type of processes- job shop, batch, mass and continuous (basic concepts)
- Product-process Design Matrix
- Services design matrix
- Technology issues in process design
- Flexible Manufacturing Systems (FMS) and Computer Integrated Manufacturing (CIM).

Unit 5: Forecasting (10L)

- Definition, types, qualitative (grassroots, market research and Delphi method)
- Quantitative approach (simple moving average method, weighted moving average) Numerical Problems
- Scheduling: operation scheduling, goals of short-term scheduling
- Job sequencing (FCFS, SPT, EDD, LPT, CR) – Basic Concept
- Gantt charts.

Unit 6: Maintenance Management (8L)

- Definition, need and types of maintenance management
- Equipment life cycle (Bathtub curve)
- Lean production – definition of lean production, lean demand-pull logic
- Waste in operations, elements that address the elimination of waste
- 2 card Kanban production control system.

Unit 7: Work Study (8L)

- Work study & method study
- Work measurement, performance rating, standard time, work sampling
- Numerical problems

Unit 8: Statistical Quality Control (4L)

- Statistical Quality control: Basic concepts, Variations in process (common & assignable causes)
- Control charts: Variable measures (mean and range chart)
- Numerical problems

SUGGESTED TEXTBOOKS/ READING MATERIALS:

1. Mahadevan B, Operations Management Theory & Practice, Pearson Education
2. Heizer Jay and Render Barry, Production & Operations Management, Pearson Education

3. Chase R B, Aquilano N J, Jacobs F R and Agarwal N, Production & Operations Management Manufacturing and Services, Tata McGraw Hill
4. S.P. Gupta, Statistical methods, Sultan Chand & Sons.
5. Adam, E.E and Ebert, Production & Operations Management, Prentice Hall of India, New Delhi
6. S.N. Chary, Production & operations management – Tata McGraw Hill, New Delhi
7. Buffa E S, & Sarin R K, Modern Production / Operations Management (8th edition), John Wiley, 1994
8. Gaither and Frazier, Operations Management, Thomson South-Western
9. Production and Operations Management, Aswathappa K, Himalaya Publishing House
10. Production & Operations Management (Text & Cases), Badi, R. V. & Badi, N. V., Vrinda Publications (P) Ltd
11. Production And Operations Management, Kumar, A. S. & Suresh, N., New Age International Publishers

The latest editions of the aforementioned textbooks may be followed.