

Course Type	Course Code	Name of the Course	L	T	P	Credit
DC	EMSC509	Production & Operations Management	3	1	0	4

Course Objective

The objective of this course is to provide students with an understanding of the key principles, strategies, and tools involved in the production and operations management of goods and services.

Learning Outcomes

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

- (a) Understand the functions of operations management within a business enterprise context.
- (b) Develop skills to effectively solve problems in production and operations management.

Unit No.	Topics to be covered	Lecture Hours	Learning Outcome
1	Introduction to production & operations management. Understanding the role of forecasting for production and operations management. Concepts of qualitative and quantitative forecasting techniques. Numerical examples of various quantitative forecasting techniques. Concept of MAD, MSE and MAPE in the context of forecasting.	6L+2T	Upon completing this section, students will be able to: Comprehend the fundamental concepts of operations management. Determine the appropriate forecasting model for different scenarios. Accurately calculate and interpret forecast errors.
2	Importance of production planning process. Concept of aggregate production planning. Understanding of capacity, demand and mixed options for capacity planning. Numerical example of aggregate production planning. Concept of Materials requirement Planning in production. Understanding of dependent demand, bill of material, lead time, inventory etc in the context of MRP. Developing MRP tables for product and related numerical problems. Understanding of lot-for-lot, EOQ, and related strategies in the context of MRP.	7L+3T	After completing this section, students will be able to: Understand the concepts of aggregate production planning and Material Requirements Planning (MRP). Identify the appropriate production strategy for various operational needs. Develop MRP tables.
3	Role of Job Shop Scheduling and sequencing strategies for production management. Priority rules for sequencing the jobs (FCFS, EDD, SPT, and LPT). Sequencing n-jobs on two machine problem, and Extension of two machines problem to three machines problem. Understanding on n-job m-machine sequencing problem.	8L+3T	After completing this section, students will be able to: Utilize the assignment method to effectively load jobs in production planning.
4	Introduction to inventory management. Types and functions of inventory. Various inventory models (EOQ, EPQ, and Price Break etc) with numerical problems.	7L+3T	After completing this section, students will be able to understand: Key inventory concepts and their applications. Various mathematical models used for effective inventory management.

5	Concept of facility location. Methods of evaluating location alternatives. Linear programming based models for facility location. Concept of facility layout for managing operations. Different types of layout. Designing and optimizing layout using CRAFT and ALDEP algorithms.	6L+1T	After completing this section, students will be able to: Identify and explain the key factors that influence location decisions. Apply different mathematical models to address facility location problems. Understand the challenges and considerations in facility layout design. Design and optimize an efficient facility layout.
6	Concept of strategy in managing operations, Product and Process Design, Statistical Process Control, Different types of control charts, Concept of JIT in the production process.	8L+2T	After completing this section, students will be able to: Grasp the significance of operations strategy in both manufacturing and service sectors. Understand the principles of product and process design. Apply Statistical Process Control (SPC) in production and service contexts. Comprehend the concepts of Just-in-Time (JIT), Toyota Production System (TPS), and lean operations.
	Total	42L+14T	

Text Books:

1. Operations Management, Jay Heizer & Barry Render, Pearson
2. Production & Operations Management, Panneerselvam, PHI India

Reference Books:

1. Operations and Supply Chain Management, F. Robert Jacobs, Ravi Shankar, Richard B. Chase, McGraw- Hill
2. Modern production/ Operations Management, Buffa & Sarin, John Wiley