Course Title: Production and Operations Management			
Course Code: PPM 215	**No. of credits**: 4	**L-T-P**: 40-00-0	**Learning hours**: 40
Pre-requisite course code and title (if any): NA			
Department: Policy & Management Studies			
Course coordinator:		**Course Instructor:** Dr Anand Jaiswal	
Contact Details:		**Offered in:** Semester 2	
Course Type: Core			

Course Description:

Every organization—whether manufacturing goods or delivering services—operates through a system of interlinked processes that transform inputs into valuable outputs. Production and Operations Management (POM) is the discipline that designs, manages, and continuously improves these processes to achieve efficiency, quality, and customer satisfaction.

This course provides a comprehensive understanding of how products and services are planned, produced, and delivered. It explores both the strategic and tactical aspects of operations, covering topics such as product and process design, capacity planning, facility layout, supply chain coordination, inventory management, quality control, and logistics. While traditional operations emphasized manufacturing efficiency, today's business environment demands agility in service operations, digital platforms, and e-business models. The course therefore also focuses on operations planning, scheduling, and performance management in service and technology-driven contexts.

By the end of the course, students will be able to analyze and improve operational systems, align them with organizational strategy, and contribute to sustainable and competitive business performance.

Course objectives

To develop students' ability to analyze, design, and manage production and service operations for achieving efficiency, quality, and strategic competitiveness in organizations.

Course Contents

Module	Topic	L	T	P
1	**Introduction to Production and Operations Management** Role of operations in organizations; Goods vs. services; Operations strategy and its alignment with business strategy; Global competitiveness and sustainability in operations.	3	0	0
2	**Process Design and Facility Layout** Types of production systems; Process mapping and flow analysis; Facility location and layout planning; Capacity planning and utilization.	5	0	0
3	**Demand Forecasting and Capacity Planning** Quantitative and qualitative forecasting methods; Time series models; Regression and causal models; Forecast accuracy and error analysis; Matching capacity with demand.	5	0	0
4	**Product and Service Design** Design for quality and manufacturability; Value engineering; Product life-cycle management; Service blueprinting; Innovation and sustainability considerations.	4	0	0
5	**Production Planning and Scheduling** Aggregate planning; Master production scheduling (MPS); Material Requirements Planning (MRP); Just-in-Time (JIT) and Lean systems; Agile operations.	5	0	0

6	**Operations Optimization using Linear Programming (LP)** Formulation of production problems; Resource allocation; Transportation and assignment models; Sensitivity analysis; Introduction to decision support and solver tools (Excel/other).	4	0	0
7	**Inventory and Supply Chain Management** Inventory models (EOQ, safety stock, reorder points); Bullwhip effect; Supply chain coordination and integration; Sustainable and resilient supply chains; Emerging technologies (IoT, AI, Blockchain).	5	0	0
8	**Quality Management and Continuous Improvement** Total Quality Management (TQM); Six Sigma; Statistical Process Control (SPC); Quality tools and ISO standards; Continuous improvement and benchmarking.	5	0	0
9	**Contemporary Issues and Case Studies in POM** Operations in service and digital businesses; Sustainable manufacturing; Global operations strategy; Case studies on leading Indian and international firms.	4	0	0
	Total (in hours)	**40**	**0**	**0**

Evaluation criteria

- Minor 1 Exam (Case Finalization and Presentation) - 20%
- Minor 2 Exam (Case Development and Presentation) - 40%
- Major Exam (Written Exam) - 40%

Learning Outcome:

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

1. Understand the strategic role of operations in achieving efficiency and competitiveness.
2. Apply tools such as demand forecasting and linear programming for operational decision-making.
3. Design and manage production, inventory, and supply chain systems effectively.
4. Evaluate quality, sustainability, and continuous improvement practices in operations.

Materials:

1. B Malakooti (2014), 'Operation and Production System with Multiple Objectives', Wiley
2. S N Chary (2013), 'Production and Operation Management', 5th Edition, Tata Mac Graw Hill
3. William Stevenson. Operations Management, 12th Edition, Mc Graw Hill
4. Heizer. Operations Management – Sustainability and Supply Chain Management, 12th Edition, Pearson

Pedagogical approach

- Lectures
- Illustrative cases and case discussions (groups)
- Assignments (Individual / group).

Additional information (if any)

Student responsibilities

The students are expected to submit assignments in time and come prepared with readings when provided.

Prepared by: Dr Anand Jaiswal

Course Reviewers:

1. Dr. Cherian Samuel, IIT (BHU), Varanasi
2. Dr. Manish Kumar, ICFAI Business School, Hyderabad
3. Dr. Nishtha Agarwal, Symbiosis Business School, Pune