5th Semester	RPR5D001	Production and Operation Management	L-T-P 3-0-0	3 Credits

MODULE I **(10 HOURS)**

Operations Function in an Organization, Manufacturing Vrs Service Operations, System view of Operations, Strategic Role of Operations, Operations Strategies for Competitive Advantage, Operations Quality and Productivity Focus, Meeting Global Challenges of Production and Operations Imperatives.
Designing Products, Services and Processes: New Product Design- Product Life Cycle, Product Development Process, Process Technology: Project, Jobshop, Batch, Assembly Line, Continuous Manufacturing; Process Technology Life Cycle, Process Technology Trends, FMS, CIM, CAD, CAM; Design for Services, Services Process Technology.

MODULE II **(12 HOURS)**

Location and Layout Planning: Factor Influencing Plant and Warehouse Locations, Impact of Location on cost and revenues. Facility Location Procedure and Models: Qualitative Models, Breakeven Analysis, location Model, centroid method. Layout Planning: Layout Types : Process Layout, Product Layout, Fixed Position Layout Planning, block diagramming, line balancing, computerized layout planning- overview. Group Technology.
Forecasting: Principles and Method, Moving Average, weighted Moving Average, Exponential Smoothing, winter's Method for Seasonal Demand, Forecasting Error.
Manufacturing Planning and Control: The Framework and Components: Aggregate Planning, Master Production Scheduling, Rough-cut-Capacity Planning, Material Requirements Planning, Capacity Requirements Planning.

MODULE III **(12 HOURS)**

Sequencing and Scheduling: Single Machine Sequencing: Basics and Performance Evaluation Criteria, Methods for Minimizing Mean Flow Time, Parallel Machines: Minimization of Makespan, Flowshop sequencing: 2 and 3 machines cases: Johnson's Rule and Jobshop Scheduling: Priority dispatching Rules.
Inventory Control: Relevant Costs, Basic EOQ Model, Model with Quantity discount, Economic Batch Quantity, Periodic and Continuous Review Systems, Safety Stock, Reorder Point and Order Quantity Calculations. ABC Analysis.

MODULE IV **(6 HOURS)**

Modern Trends in Manufacturing: Just in Time (JIT) System: Shop Floor Control By Kanbans, Total Quality Management, Total Productive Maintenance, ISO 9000, Quality Circle, Kaizen, Poka Yoke, Supply Chain Management.

Books:

[1] S.N.Chary, "Production and Operations Management", Tata McGraw Hill
[2] R. Paneerselvam, "Production and Operations Management, Prentice Hall of India
[3] Aswathappa & Bhatt – Production & Operations Management, HPH
[4] E.E. Adam and R.J. Ebert "Production and Operations Management", Prentice Hall of India

Equivalent NPTEL MOOCs:

Course Name:	Production and Operation Management
Course Link:	https://nptel.ac.in/courses/110/107/110107141/
Course Instructor:	Prof. RajatAgarwal, IIT Roorkee