BMEE305L	Manufacturing Planning and Control	L	T	P	C
		3	0	0	3
Pre-requisite	**Nil**	**Syllabus version**			
		1.0			

Course Objectives

1. To impart knowledge on operations strategy, product planning and forecasting.
2. To develop skills to estimate and use appropriate process planning, layouts location and facility location.
3. To understand the importance of capacity planning, management, production scheduling and controlling systems.

Course Outcome

At the end of the course, the student will be able to

1. Take the decisions in conversion process, manufacturing strategy, product planning and forecasting product demand
2. Take the decisions in process planning and design, performance measures, capacity planning
3. Take the decisions in selection of facilities location and design the facilities layout
4. Generate the aggregate plans, master schedules, short-term schedules
5. Generate material requirements planning and strategies for manufacturing excellence.

Module:1	**Operations Strategy**	**5 hours**

Operations and Productivity: Operations / manufacturing, Operations for goods and services, Operations for Goods and Services, The Productivity Challenge, Decision making in an organization / conversion process.

Operations Strategy: A global view of operations, Developing missions and strategies, Competitive priorities, Issues in operations strategy, Strategy development and implementation, Strategic planning, Core competencies and outsourcing, Global operations strategy options.

Module:2	**Product planning and Forecasting**	**7 hours**

Design of Goods and Services: Goods and services selection, Generating new products, Product development, Issues for product design, Product development continuum, Defining a product, Documents for production - product life-cycle, Service design, Transition to production.

Forecasting: Types, Strategic importance, Steps, Approaches, Time-Series, Forecasting methods, Monitoring and controlling forecasts.

Module:3	**Process planning**	**5 hours**

Process Strategy: Process Strategies, Selection of equipment, Process analysis and design, Special considerations for service process design, Production technology, Technology in services, Process redesign.

Module:4	**Facilities location**	**6 hours**

Location Strategies: The Strategic importance of location - supply chain considerations, Factors affecting location decisions, Methods of evaluating location alternatives - costing alternative locations - scoring models - geometric models, Locating multiple facilities, Service location strategy, Location of facilities on networks, Geographic information systems.

Module:5	**Layout of facilities**	**7 hours**

Layout Strategies: Strategic importance of layout decisions - Types of layout – product layouts, process layouts, fixed-position layouts, hybrid/combination layouts, cellular Layouts, service layouts, Designing product layouts and line-balancing, Designing process layouts – measure of effectiveness.

Module:6	**Capacity planning and Constraint management**	**6 hours**

Capacity planning and Constraint Management: Defining and measuring capacity, Determinants of effective capacity, Design of effective capacity, Bottleneck analysis and the theory of constraints, Break-even analysis, Reducing risk with incremental changes, Applying expected monetary value, Applying investment analysis to strategy-driven investments, Forecasting capacity requirements, Developing capacity strategies, Evaluating Alternatives.				
Module:7	**Production planning, Scheduling, MRP and Inventory Control**			**7 hours**
Hierarchy of planning decision, Planning process, Approaches for aggregate planning, Master schedule, Short-term schedules, Control of schedules. MRP process and extensions to MRP. Inventory control, JIT systems, Lean operations, Toyota Production System				
Module:8	**Contemporary Issues**			**2 hours**
	Total Lecture hours:			**45 hours**
Text Book				
1.	Jay Heizer, Barry Render, Munson Chuck, and Sachan Amit, Operations Management, 2017, 12th Edition, Pearson.			
Reference Books				
1.	Stevenson William J,Operations Management, 2018, 13th Edition, McGraw-Hill.			
2.	Mahadevan B, Operations Management: Theory and Practice, 2010, 2nd Edition, Pearson India.			
Mode of Evaluation: CAT, Written assignment, Quiz, FAT				
Recommended by Board of Studies		09-03-2022		
Approved by Academic Council		No. 65	Date	17-03-2022