

UNDERGRADUATE PROGRAMME IN BACHELOR OF MANAGEMENT STUDIES

OPERATIONS MANAGEMENT

Learning Objective: To understand the production and operation function and familiarize students with the techniques for planning and control.

Course contents:

Unit I

Lectures: 6

Operations Management: An Introduction: Introduction to Production & Operations Management: Definition, need, responsibilities, key decisions of OM, goods vs. services. Operations as a key functional area in an organization. . Operation Strategies-Definition, relevance, strategy formulation process, order qualifying and order winning attribute. Definition of lean production, lean Demand Pull logic, waste in operations, elements that address elimination of waste, 2 card kanban Production Control system.

Unit II

Lectures: 10

Forecasting and Scheduling: Forecasting-Definition, types, qualitative (grass roots, market research and delphi method) and quantitative approach (simple moving average method, weighted moving average and single exponential smoothing method), forecast error, Mean Absolute Deviation (MAD). Scheduling: Operation scheduling, goals of short term scheduling, job sequencing (First Cum First Serve (FCFS), Shortest Processing Time (SPT), Earlier Due Date (EDD), Longest Processing Time (LPT), Critical Ration (CR)) & Johnson's rule on two machines, Gantt charts.

Unit III

Lectures: 20

Planning Techniques: Aggregate Planning: Definition, nature, strategies of aggregate planning, methods of aggregate planning (level plan, chase plan and mixed plan, keeping in mind demand, workforce and average inventory. Capacity Planning: Definition, measures of capacity (input and output), types of planning over time horizon, Decision trees analysis. Queuing and Inventory Models: Elementary Queuing Theory Models: Poisson-Exponential Single Server Model with Infinite Population; M/M/1, M/M/C, Inventory Management: Economic Order Quantity with finite and infinite supply

Unit IV

Lectures: 8

Operations and Services Design: Process Selection: Definition, Characteristics that influence the choice of alternative processes (volume and variety), type of processes- job shop, batch, mass and continuous, product-process design Matrix and Services design matrix, technology issues in process design, flexible manufacturing systems (FMS), computer integrated manufacturing (CIM). Layout Decision: Layout planning – Benefits of good layout, importance, different types of layouts (Process, Product, Group technology and Fixed position layout). Assembly line balancing by using Longest Operating Time (LOT) rule. Location Decisions & Models: Facility Location – Objective, factors that influence location decision, location evaluation methods- factor rating method.

Unit V

Lectures: 12

Maintenance Management & Quality Control: Maintenance Management: Need of maintenance management, equipment life cycle (Bathtub curve), measures for maintenance performance (Mean Time Before Failure (MTBF), Mean Time To Repair (MTTR) and availability), Reliability: Definition and function of series and parallel. Statistical Quality control: Variations in process (common & assignable causes), Variable measures (mean and range chart), Attribute measures (proportion of defects and no. of defects) using control tables control charts, single sampling plan : OC curve Acceptance sampling.

Text Books:

1. Mahadevan B (2006). *Operations Management Theory & Practice* (2nd ed.). Pearson Education.
2. S.N. Chary(2000). *Production & operations management* (3rd ed.). New Delhi: Tata McGraw Hill.

References:

1. S.C. Gupta & V.K. Kapoor (2010). *Fundamentals of Applied Statistics* (4th ed.). Sultan Chand & Son
2. Heizer Jay & Render Barry (2005). *Production & Operations Management* (8th ed.). Pearson Education
3. Chase R B, Aquilano N J , Jacobs F R and Agarwal N(2006): *Production & Operation Management Manufacturing and Services*(11th ed.), Tata McGraw Hill
4. V.N.A Naikan (2011): *Reliability Engineering And Life Testing*, Eastern Economy edition, PHI