MGT 205: Operations Management

Credits: 3
Lecture Hours: 48

Course Objective

This course aims to impart the basic knowledge, tools and techniques of operations management and mathematical models used in operations research to make effective business/ management decision to students.

Course Description

Introduction to operations management. Operations strategy, Product and service design, Inventory management and Aggregative planning, Quality system, Decision theory, Linear programming problem, Transportation problem, Assignment problem and Game theory.

Course Details

Unit 1: Introduction **5 LHs**

Operations management: Definitions, scopes, and objectives; Transformation process; Differences between production and service operations; Operations and supporting functions; Role of the operations manager; Production system: intermittent and continuous; Key issues for operations managers; Historical evolution of operations management.

Unit 2: Operations Strategy **3 LHs**

Introduction, linkage between corporate, business and operations strategy; Components of operations strategy; Manufacturing strategies; Service strategies; Productivity: Concepts, and types.

Unit 3: Aggregate Planning and Inventory Management **6 LHs**

Concept of aggregate planning; Aggregate planning strategies; Planning options; Aggregate planning in services; Concept and importance of inventory; Inventory costs; Dependent and independent demand; Inventory systems- continuous and periodical; Basic economic order quantity (with and without discount).

Unit 4: Quality System **4 LHs**

Introduction to quality; Concept and historical evolution of total quality management; Costs of quality; Quality Control: Introduction, objectives and advantages; Statistical

process control -Control charts- control charts for variable; JIT and Six Sigma; Quality Management System: ISO 9000 series; 7 tools for the quality.

Unit 5: Decision Theory **7 LHs**

Decision making environments; Decision making under uncertainty: Criterion of maximax, maximin, minimax regret, Laplace and Hurwitz's; Decision making under risk: Expected monetary value criterion, Expected opportunity loss criterion; Marginal analysis.

Unit 6: Linear Programing **8 LHs**

Introduction to linear programming; Characteristics of Linear programming model, Graphical and simplex method (only two variables); Introduction to duality.

Unit 7: Transportation Problem **4 LHs**

Introduction, Initial basic feasible solution, Testing optimality condition, Solution of minimization transportation problem (excluding loop formation).

Unit 8: Assignment Problem **4 LHs**

Introduction, Solution of minimization and maximization assignment problem.

Unit 9: Game Theory **4 LHs**

Introduction, Importance of game theory, Two person zero- sum game, Pure strategies, Games with saddle point, Mixed strategies, Rules of dominance, Solution of Games: Algebraic method only.

Class Lecture = 45 hrs. Assessment = 3 hrs.

Suggested Reading

Adam, E. E., and Jr. R. J. Ebert. ***Production and Operations Management*.** New Delhi: Prentice-Hall of India Private Limited.

Chase, R.B., F.R. Jacobs, N.J. Aquilano and N.K. Agrawal. ***Operations Management for Competitive Advantage*.** New Delhi: Tata McGraw-Hill Publishing Company Ltd.

Dahlagaard J. J., Kristensen, K. and G.K. Kanji**.** ***Fundamentals of Total Quality Management Process analysis and improvement*.** London and New York: Taylor and Francis.

Frederick S. H., and G. J. Lieberman. ***Introduction to Operations Research*.** New York: McGraw-Hill Education.
Gaither, N., and G. Frazier. ***Operations Management***. Singapore: Thomson Asia Pvt. Ltd.
Krajewski, L. J., and L.P. Ritzman. ***Operations Management***. Delhi: Pearson Education Pvt.
Stevenson, W.J. ***Operations Management***. New York: McGraw-Hill Education Ltd.
Taha, H. A. ***Operation Research: An Introduction***. England: Pearson Education Ltd.