

# MSC 516: Production and Operations Management

*Credits: 3*  
*Lecture Hours: 48*

## Course Objectives

This course aims to impart knowledge and skills of production and operations management to students so that they can relate the theoretical aspects with real world operations.

## Course Description

The course contains basic concepts and introduction, production planning and scheduling, materials management, managing for quality and optimization techniques

## Course details:

### Unit1: Basic Concepts and Introduction

**LH 6**

Concept, Transformation model, manufacturing versus Service operations, Historical Development of Operations Management, Types of production system, operations strategy, global view of operations, achieving competitive advantage through operations, concept and types of Productivity

### Unit 2: Production planning and scheduling

**LH 14**

Product development: Operational issues in product life cycle; product development process, Quality function deployment, value engineering, Manufacturing process and service process, Capacity planning decisions, aggregate planning strategies, location planning: strategic importance of location, Factors affecting location decisions, methods of evaluating location alternatives, layout strategies: strategic importance of layout decisions, Types of layout, Designing product layout: Assembly line balance  
Overview of the operations planning and scheduling system, loading, priority sequencing, forward scheduling and backward scheduling, expediting, optimized production technology

### Unit 3: Materials Management

**LH 8**

Objectives and importance of material management, procurement activities, Material Handling, warehousing, Inventory management, Inventory costs, Inventory control system, Material Requirement Planning (MRP), ABC Inventory planning system,

### Unit 4: Managing for Quality

**LH 6**

Introduction, definitions of quality, concepts of Total quality management, Quality management system, 7 tools for the quality journey, Quality costs, Six-Sigma, Statistical process control, control charts for variables and attributes, acceptance sampling, process capability

### Unit 5: Optimization Techniques

**LH 14**

**Linear programming:** Introduction to Linear programming problem, general statement of linear programming problem, Formulation of linear programming problem, Assumptions underlying linear programming, some special cases in linear programming, Simplex method, Solution to maximization problems, solution to minimization problems, Big-M method, Duality in linear programming problem, Economic interpretation of duality, concept on sensitivity analysis

**Transportation problem:** Vogel's Approximation method (VAM) for generating initial basic feasible solution, Testing Optimality condition, Balanced and unbalanced transportation problem, closed path formation, Maximization problem

**Assignment problem:** Introduction, solution of Minimization and maximization of assignment problem by Hungarian Method, balanced and unbalanced assignment problem.

### **Suggested Readings**

1. Stevenson, W.(2012). *Operations Management*.11<sup>th</sup> ed. New Delhi: Tata McGraw-Hill.
2. Vohra N.D., (2004). *Quantitative Techniques in Management*. New Delhi: Tata McGraw-Hill.
3. Hillier F.S.,Liberman G.J. (2005). *Introduction to Operations Research: Concepts and cases*. New Delhi: Tata McGraw-Hill.
4. Adam, E and Ebert R. (2007). *Production and operations management Concepts, Models and Behaviour*.5<sup>th</sup> ed. New Delhi: Prentice -Hall of India Private Limited.
5. Krajewski L, Ritzman L., Malhotra, M.(2007): *Operations Management Process and Value Chains*.8 ed. New Delhi: Prentice Hall.
6. Chase Richard B., Aquilano Nicholas J and Jacobs F. Robart (1999): *Production and Operations Management: Manufacturing and Services*, 8<sup>th</sup> edition, Tata McGraw Hill Publishing Company, New Delhi
7. Sthapit , A. B, Yadav R. P, Tamang G. , Dhital S. and Adhikari P. (2015). *Production and Operations Management*. Kathmandu: Asmita Books Publishers and Distributors (P) Ltd.
8. Shrestha S. and Silwal D. (2057). *Production and Operations Management*. Kathmandu: Taleju Prakashan
9. Regmi L., Joshi P.R. ,Chaudhary A.K., & Fago G, . (2012). *Production and operations management*. Kathmandu: Buddha Publication