Principles of Operations Management: Concepts and Applications – Topic Outline

Principles of Inventory Management (PIM)

Session 1: Operation Management – Foundations

Define the science and practice of operations management (OM)
Answer the question why OM should be studied
Describe how today's business trends are driving operations management
Discuss the role of operations management in the organization
Define the value-added activities performed by OM
Describe how OM fits into the organization
Describe the functions performed by OM
Describe how OM has changed over the decades
Outline the role of OM and business strategy
Identify how OM contributes to business strategy
Discuss how businesses can compete with OM
Detail the ten strategic decisions of OM
Identify career opportunities in the field of OM
Perform an inventory management knowledge self-assessment

Session 2: Fundamentals of Inventory Management

Define inventory management
Define inventory management objectives
Describe the different classes of inventory
Identify the different levels of inventory management
Review the characteristics of inventory in the supply chain
Detail the strategic inventory management process
Describe the elements of an effective inventory management strategy
Balance demand and supply objectives
Contrast the conflicting objectives of inventory management among marketing/sales, finance, and operations
Understand inventory trade-off decisions

Describe inventory and demand flows
Define supply chain inventory and demand flows
Describe inventory dynamics
Understand how inventory provides value
Determine whether inventory is an asset or a liability
Assess the impact of cash flow and inventory management

Session 2: Advanced Topics

Trade-off decisions by item class
Subclasses of inventory
Item numbering

Session 3: Purpose and Function of Inventory

Explain why companies carry inventory
Define the five functions of inventory and describe their use
Describe the purpose of decoupling inventories
Detail the components of inventory decision making
Use a simple formula to estimate inventory throughput and cycle and pipeline inventories
Define the elements of inventory cost
Understand and calculate inventory carrying costs
Define the elements of manufacturing and purchasing costing
Calculate the impact of stockout costs on the operation
Discuss how excess and obsolete inventories affect inventory management
Work with the five basic methods of inventory valuation.

Session 3: Advanced Topics

Measuring inventory throughput
Cost of preventing a stockout
Capacity associated costs
Estimating inventory values
Calculating order costs
Inventory valuation methods

Session 4: Inventory Replenishment Management

Explain the basic functions of statistical inventory management
Understand the difference between independent and dependent demand
Define the theory of inventory replenishment management
Describe the difference between continuous and periodic inventory review
Describe the inventory replenishment planning process
Define the seven inventory replenishment methods
Work with the order point inventory ordering method
Calculate safety stock
Calculate the order point
Calculate a periodic inventory order method

Calculate the inventory order quantity
Calculate the economic order quantity (EOQ)
Review the inventory planning process

Session 4: Advanced Topics

Normal distribution diagram
Characteristics of order point management
Periodic review exercise
EOQ exercise

Session 5: Additional Inventory Replenishment Techniques and Inventory Performance

Work with several advanced inventory management techniques
Counter uncertainty in supplier delivery times
Understand and perform planning using *time-phased order point* (TPOP)
Define order quantities by item class
Work with financial statements and inventory
Calculate relevant inventory turnover ratios
Define inventory performance management tools
Understand and work with ABC inventory control
Establish inventory accuracy tools
Understand and establish a cycle counting program
Identify today's electronic inventory data collection technologies

Session 5: Advanced Topics

Production noninstantaneous receipt
Products orders and delivered jointly
Quantity discount

Session 6: Mid-Term Exam

Session 7: Lean Inventory - Concept and Practice

Define the concepts of Just-in-Time (JIT) and lean and how they apply to the management of inventories
Describe the evolution of the lean philosophy and techniques
Define the core principles of lean
Describe in detail the three major sources of operations waste
Describe the lean toolkit of techniques to combat waste
Differentiate value-added work from waste
Manage inventory effectively in a lean environment
Determine lean lot sizes
Establish a pull system
Calculate the number and work with kanbans/containers
Describe the benefits of lean on all levels of the organization

Session 7: Advanced Topics

JIT/lean evolution
Ten cultural and managerial elements of lean
Impact of lot size reduction
Lean transformation roadmap

Session 8: Fundamentals of Purchasing

Define the purchasing function
Identify purchasing as a key business function
Describe the categories of purchasing
Detail the strategic responsibilities of purchasing
Describe purchasing's detailed responsibilities
Understand the structure of the purchasing organization
Describe purchasing's role with other business functions
Understand the difference between centralized and decentralized purchasing
Describe the buyer/planner concept
Manage the make or buy decision
Create an effective purchasing strategy

Session 8: Advanced Topics

Purchasing classification exercise
Financial impact of purchasing

Session 9: Sourcing Strategies

Define the sourcing process
Understand the difference between tactical and strategic buying
Detail the steps in making the make or buy decision
Develop a cost avoidance analysis
Conduct an effective spend analysis
Distinguish between different types of supplier relationship
Execute a sole or a multiple supplier sourcing strategy
Effectively score capabilities and select the optimal supplier
Work with different supplier pricing alternatives
Engage in effective negotiations with a supplier
Understand the elements of supplier contract formulation
Construct a collaborative program that engages the supplier in product design
Define supplier relationship management (SRM)

Session 9: Advanced Topics

Cost avoidance analysis
Spend analysis documents
Pareto chart of percentage by category
Supplier selection comparison
Purchase quantity discount
Supplier relationship characteristics

Session 10: PO Management and Performance Measurement

Define the purchasing management process
Manage the procurement database
Detail the various purchase order methods
Trace the purchase order flow from requirements identification to purchase order close-out
Determine the timing of purchase order release
Using material requirements planning (MRP), reorder point (ROP), and kanban systems for order release
Establish a vendor managed inventory (VMI) process
Determine inbound transportation factors
Perform receiving and order closeout
Review purchase order status reporting
Review supplier and internal purchase organization performance
Work with international sourcing
Explore the impact of the Internet and computerized technologies on procurement

Session 10: Advanced Topics

Supplier rating
Cost of poor quality
e-SRM services
e-SRM processing

Session 11: Final Exam