



APICS PRINCIPLES OF OPERATIONS MANAGEMENT TOPIC OUTLINE

CONCEPTS AND APPLICATIONS

About this Topic Outline

This outline details the concepts and applications covered in all five of the APICS Principles of Operations Management courses. Professionals interested in Principles will find this is a helpful reference and may use it to identify the course details and topics for each of the five Principles courses. If you have any questions, please contact APICS Customer Service at service@apics.org.

III. Principles of Manufacturing Management (PMM)

Session 1: Operations Management Foundations

- Describe how today's business trends are driving operations management
- Define the science of operations management
- Identify the decisions made by operations managers
- Explain how operations management is important to both manufacturing and service functions
- Discuss the role of operations management in the organization
- Describe operations management's role in supply chain management
- Provide examples of how operations management is a competitive weapon
- Identify career opportunities in the field of operations management
- Perform a manufacturing management self-assessment review

Session 2: Introduction to Manufacturing Management

- Define manufacturing
- Review the components of manufacturing management
- Review product manufacturing choices
- Understand the impact of volume, variety, and lead time
- Explore product manufacturing choice positioning
- Detail manufacturing process choices
- Explore product and process choice positioning
- Review process layout options
- Explore process layout positioning
- Detail steps for developing a manufacturing strategy
- Outline manufacturing structural and infrastructural choices
- Understand product profiling
- Explore batch versus flow and push versus pull manufacturing techniques
- Detail job content and operator tasks

Advanced Topics:

- Product profiling
- Production plan issues
- Layout characteristics – exercise
- Performance objectives – exercise
- Process selection – unit costs
- Process selection – least cost

Session 3: Manufacturing Product Structures

- Define the product structure
- Define the bill of material
- Define the process routing
- Product structure management process
- Bill of material uses
- Basic bill of material formats
- Achieving bill of material accuracy
- Define work centers
- Work center utilization and efficiency
- Processing time elements
- Establishing the process routing
- Manufacturing cost overview
- Product structure cost development
- Standard cost example

Advanced Topics

- Modular bills of material
- Engineering change control management
- Advanced process routing exercise
- Activity based costing

Session 4: Basics of Material Requirements Planning (MRP)

- Understand the requirements to plan and make a product
- Define the critical inventory question
- Define the two basic order methods: stock replenishment and material requirements planning (MRP)
- Understand the difference between independent and dependent demand
- Detail the problems with stock replenishment techniques
- Compare stock replenishment and MRP techniques
- Understand the concept of time phasing
- Define MRP
- Map the flow of MRP
- Detail MRP objectives and functions
- Work with MRP inputs and outputs
- Use bills of material, lead time offsetting, and exploding
- Work with the MRP planning grid calculations

Advanced Topics

- Advanced time phasing concepts
- Dates and time-buckets
- Problem of lumpy demand

Session 5: Managing with MRP

- Perform the MRP BOM explosion process
- Define the role of the MRP planner
- Understand the causes of MRP change
- Detail the MRP planning process
- Define the prerequisites for MRP
- Work with the MRP generation
- Understand the types of MRP supply orders
- Detail MRP system action messages
- Perform MRP action message activities
- Define MRP performance policies and methods
- Identify MRP problem indicators
- Develop MRP performance measurements

Advanced Topics

- Planning for scrap and waste
- Low level coding overview
- MRP pegging
- MRP and service order management
- MRP in the make-to-order environment

Session 6: Mid-Term Exam

Session 7: Capacity Planning and Management

- Define capacity management
- Detail the elements of capacity management
- Understand the relationship between planning and controlling priorities and capacities
- Understand the four levels of capacity management
- Define capacity requirements planning (CRP)
- Understand the flexibility of capacity and scheduling
- List the objectives of capacity planning
- Detail the inputs into capacity management
- Describe the steps to effectively managing the capacity process
- Detail of the components of capacity management
- Calculate work center capacity
- Calculate work center load
- Schedule work center operations
- Manage the load versus capacity report
- Manage excesses and shortages in capacity

Advanced Topics

- Calculating efficiency and utilization
- Finite and infinite loading
- Manufacturing environments and capacity
- Process flow scheduling

Session 8: Production Activity Control

- Define production activity control (PAC)
- Detail the goals of production activity control (PAC)
- Detail the characteristics of PAC systems
- Understand the linkage between PAC and the planning system
- Work with PAC database files
- Work with the major activities of the PAC system
- Detail the manufacturing order release process
- Detail PAC scheduling activities
- Explore PAC scheduling priority rules
- Detail PAC data collection and monitoring activities
- Understand the purpose of PAC control and feedback activities
- Detail order disposition and closeout activities

Advanced Topics

- PAC control and feedback process steps
- Types of manufacturing order
- Characteristics of good PAC performance measurement
- Relationship of PAC with other functions

Session 9: Advanced Scheduling

- Detail the two types of scheduling
- Define MRP-push system and lean-pull system scheduling
- Define scheduling components
- Work with MRP-based scheduling inputs
- Manage order schedules
- Work with scheduling functions
- Understand planner order release and scheduling
- Use the dispatch list
- Detail the steps in the rescheduling process
- Resolve schedule conflicts
- Work with order status and work center load reports
- Use operation overlapping and lot-splitting techniques
- Schedule bottleneck work centers
- Manage scheduling with input/output reporting

Advanced Topics

- Production planner's planned order display
- Capacity check, scheduling, and release
- Theory of constraints (TOC) scheduling

Session 10: Lean Production Management

- Define lean and just-in-time (JIT) concepts and practices
- Trace the evolution of the lean concept
- Detail the advantages of implementing lean
- Understand the structure of lean manufacturing
- Define the concept of process waste
- Use lean to standardize manufacturing processes
- Explore the elements of “lean thinking”
- Define employee involvement and empowerment
- Explore the components of lean production concepts and practices
- Work with lean plant layout design
- Understand the basics of the lean production pull system
- Define kanban production techniques
- Execute a two-card kanban production flow
- Understand the connection between MRP and lead scheduling techniques
- Use lean to develop the “customer-focused” organization.

Advanced Topics

- Calculating takt time
- Calculating kanban cards
- MRP push-based versus lean pull based systems

Session 11: Final Exam