



Principles of Operations Management: Concepts and Applications – Topic Outline

Principles of Operations Planning (POP)

Session 1: Operation 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 an operations planning self-assessment review

Session 2: Planning Foundations

- Understand the basics of business planning
- Describe the dynamics of business planning
- Understand the different levels of planning that occurs with a business
- Understand the planning and control process model
- Describe the features of a business plan
- Understand how the different levels of business planning work with each other
- Work with a business planning process model
- Develop a business mission/vision
- Perform investment planning
- Perform profit planning
- Perform asset and capital planning
- Develop business unit strategies
- Describe the components of a planning architecture model

Session 2: Advanced Topics

- Generic competitive values

Enterprise investment plan
Profit planning
Asset/capital planning

Session 3: Forecasting

Define the forecasting function
Review of the three levels of forecasting
Define demand
Explore the universal principles of forecast management
Understand forecast design and parameter issues
Detail the forecasting process
Detail the benefits of forecast accuracy
Describe the general forecasting techniques and data sources
Review qualitative, quantitative, and causal forecasting techniques
Discuss why forecasts fail

Session 3: Advanced Topics

Selection of forecasting models
Pyramid forecasting
Deseasonalized forecast
Forecast trend with exponential smoothing (Holt's model)
Forecast trend extrapolation

Session 4: Demand Management

Define demand management
Review the components of demand management
Place demand management in the MPC system
Evaluate forecast performance
Use the measures of forecast error
Calculate forecast error
Determine the MAD and standard deviation of forecast error
Calculate forecast bias and tracking errors
Define customer relationship management
Work with customer order management
Define customer service management
Explore demand management technology tools
Define demand management performance

Session 4: Advanced Topics

Tracking signal
Forecast error exercise
Safety stock calculation
Customer service gap analysis

Session 5: Sales and Operations Planning (S&OP)

Define sales and operations planning (S&OP)

- S&OP in the MPC system
- S&OP detailed planning process
- Determine product families
- S&OP planning inputs
- S&OP historical input data
- Summary of S&OP outputs
- Understand the S&OP grid
- Work with the make-to-stock (MTS) S&OP grid
- Work with the make-to-order (MTO) S&OP grid
- Implement the monthly S&OP planning meeting
- Define the benefits of S&OP

Session 5: Advanced Topics

- Executing a S&OP level strategy
- S&OP production resource planning

Session 6: Mid-Term Exam

Session 7: Aggregate Operations Planning

- Review the detailed S&OP process
- Understand the sales and marketing planning processes
- Work with product life cycles and delivery network structures
- Calculate a S&OP product family forecast disaggregation
- Understand the production planning process
- Determine production planning strategies
- Calculate the financial impact of the production plan
- Define resource requirements planning
- Develop capacity and load profiles
- Generate a resource requirements plan
- Understand the inventory planning process
- Calculate a production plan using an inventory target
- Develop the distribution plan
- Determine transportation, warehouse, and equipment and labor requirements

Session 7: Advanced Topics

- Financial decision – workforce costs
- Financial decision – inventory costs
- Financial decision – total costs

Session 8: Master Scheduling Foundations

- Define master scheduling – principles and concepts
- Understand the role of master scheduling in the MPC system
- Detail the objectives of master scheduling
- Understand master scheduling and the manufacturing environment
- Work with master scheduling approaches
- Detail the inputs to master scheduling

- Review the interaction between sales and operations planning (S&OP) and master scheduling
- Establish planning bills of material
- Understand the master schedule grid
- Work with the master schedule grid and demand management
- Calculate the projected available balance (PAB) in the master schedule grid
- Calculate net requirements in the master schedule grid
- Generate MPS orders
- Calculate available-to-promise in the master schedule grid
- Work with MPS time fences and zones

Session 8: Advanced Topics

- Managing the rolling master schedule
- Cumulative “look ahead” ATP

Session 9: Master Scheduling Processes

- Define the role of the master scheduler
- Review the causes of master schedule change
- Work with the master scheduling management process
- Work with the forecast
- Manage order requests
- Understand the use of time fences
- Understand types of master schedule orders
- Work with action messages
- Work with safety stock
- Discuss capacity planning methods
- Define the rough-cut capacity planning process
- Calculate the rough-cut capacity plan
- Detail the performance elements of a successful master schedule.

Session 9: Advanced Topics

- Environmental characteristics
- What is advanced planning and scheduling (APS)?
- Assemble-to-order (ATO) master scheduling

Session 10: Operations Systems

- Explore the importance of information technology
- Detail the role of information technology
- Analyze the technology strategic triangle
- Explore technology organization framework assumptions
- Outline operations planning system assumptions
- Explore how system technology benefits planning
- Define enterprise resources planning
- Trace the evolution of ERP systems
- Analyze the components of today’s ERP system
- Compare ERP and “best of breed” software solutions

Detail the requirements for ERP and system thinking
Outline the ERP organizational maturity model
Review ERP and enterprise competitive development
Detail the benefits of applying ERP systems to the management of the business.

Session 11: Final Exam