CONCEPT

Production Planning and Control: MPS, MRP, Capacity and Shop Floor Dispatching

25 – 29 July 2027
Dammam - Eastern Province five-star



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Ref: 89_14897 **Date:** 25 – 29 July 2027 **Location:** Dammam - Eastern Province five-star **Fees:** 19500 SAR

Introduction:

Production planning and control breaks down on the factory floor when the master schedule overloads the bottleneck, MRP releases orders against wrong bills of materials and supervisors re-sequence jobs by whoever shouts loudest. The result is late orders, swelling work in progress and overtime that does not lift output. This Core Concept course gives planners and schedulers a working method to turn an agreed volume plan into a feasible master production schedule, material plan, capacity check and finite shop floor sequence. Participants build a Production Planning and Control Workbook for one product family.

Course Objectives:

- Convert an agreed volume plan into a production plan and master production schedule with time fences and available-to-promise quantities
- Run MRP netting, lot sizing and lead-time offsetting from an accurate multi-level bill of materials and routing
- Check load against capacity with rough-cut capacity planning and capacity requirements planning, and resolve overloads
- Sequence and dispatch work orders with finite scheduling and priority rules such as earliest due date and critical ratio
- Protect the bottleneck with drum-buffer-rope and cap work in progress using Little's Law and release limits
- Measure schedule adherence, OTIF and manufacturing lead time and act on the causes of misses

Target Audience:

- Production planners who build the production plan and master production schedule
- Materials and MRP planners who release purchase and works orders from system recommendations
- Production schedulers who load work centres and set the daily job sequence
- Shift and area production leads who dispatch jobs and report progress on the shop floor
- Manufacturing engineers who maintain routings, work centre data and standard times
- Plant operations staff who track output, lead time and delivery performance

Course Outline:

Day 1: Production Planning and Control Foundations

- Planning Hierarchy: Volume Plan Input to Production Plan, MPS, MRP and Shop Floor Control
- Make-to-Stock, Make-to-Order and Assemble-to-Order Planning Strategies
- Manufacturing Master Data: Item Master, Bill of Materials, Routing and Work Centre Records
- Planning Horizon, Time Buckets and Planning Time Fence Definition
- Current-State PPC Assessment of a Plant's Planning Cycle

Day 2: Master Scheduling, MRP Logic and Capacity Models

- Master Production Schedule Grid: Projected Available Balance and Available-to-Promise
- MRP Gross-to-Net Calculation and Lead-Time Offsetting
- Lot Sizing Rules: Lot-for-Lot, Fixed Order Quantity and Period Order Quantity
- Rough-Cut Capacity Planning with Bills of Resources
- Capacity Requirements Planning from Routings and Open Works Orders

Day 3: Building and Loading the Production Schedule

- Multi-Level BOM Explosion and Pegging of Component Demand
- Infinite Versus Finite Loading of Work Centres
- Sequencing Rules: FIFO, Shortest Processing Time, Earliest Due Date and Critical Ratio
- Changeover Grouping and Campaign Scheduling for Product Families
- Works Order Release, Dispatch List and Material Kitting Check

Day 4: Bottlenecks, WIP Control and Schedule Recovery

- Theory of Constraints Five Focusing Steps for the Plant Bottleneck
- Drum-Buffer-Rope Scheduling and Buffer Penetration Monitoring
- WIP Caps and CONWIP Release Using Little's Law
- MRP Exception Messages: Expedite, De-Expedite and Cancel Actions
- Schedule Adherence, OTIF and Manufacturing Lead Time KPI Definitions

Day 5: PPC Modelling Build and the Production Planning and Control Workbook

- Discrete Assembly Case: MPS and MRP Record Build for a Three-Level Product
- Process Industry Case: Finite Schedule for a Shared Filling Line
- Capacity Load Profile and Overload Resolution Model for an Own Plant
- Production Planning and Control Workbook Assembly
- Workbook Walkthrough and Peer Challenge Session

Skills You Will Gain:

- Master Production Scheduling
- Material Requirements Planning
- Capacity Load Analysis
- Finite Scheduling
- Job Sequencing
- Bottleneck Management
- Work-in-Progress Control
- Production Performance Measurement

Why Attend This Course:

- Return with a Production Planning and Control Workbook holding a working MPS, MRP record, capacity profile and dispatch list for your own product family
- Explain to sales and supply colleagues which dates the plant can promise and why others are not feasible
- Cut firefighting on the shop floor by replacing ad hoc re-sequencing with agreed priority rules and WIP limits
- Compare planning practice with planners from discrete assembly, process and packaging plants in other sectors and countries

Conclusion:

A plan helps a plant only when it is feasible for materials and capacity and when the shop floor follows it. This course moves from the planning hierarchy and master data, through master scheduling, MRP logic and capacity checks, to finite loading, sequencing and dispatch, and then to bottleneck protection, WIP limits and delivery performance measures. The final day builds a Production Planning and Control Workbook that participants use in their next weekly planning cycle.