



10-Day Supply Chain Engineering Training Course

30 August – 10 September 2027
Abu Dhabi

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Overview

Modern industrial distribution networks require rigorous quantitative design, real-time tracking technologies, and robust resilience frameworks. This 10-day supply chain engineering training course equips operations specialists and industrial planners with analytical methods to model, optimize, and supervise multi-echelon logistics systems. Participants evaluate radio-frequency identification systems, sensor-driven tracking architectures, agile distribution models, dynamic lot-sizing heuristics, and available-to-promise protocols to improve inventory velocity and maintain service levels under volatile market conditions. This course is delivered by Agile Leaders Training Center.

Who Should Attend

- Operations planners and systems analysts modeling multi-echelon inventory policies and order flow dynamics.
- Logistics engineers designing auto-ID architectures, sensor networks, and facility throughput models.
- Procurement specialists structuring vendor managed inventory agreements and diversified sourcing arrangements.
- Distribution supervisors managing reverse logistics networks, returns consolidation, and remanufacturing loops.
- Process improvement coordinators deploying lean operations, value stream mapping, and continuous flow controls.

Departments and Industries

This program supports technical teams and operational managers across manufacturing and distribution sectors.

- Automotive assembly plants and tier-one parts manufacturing units
- Electronics manufacturing and semiconductor supply chain divisions
- Pharmaceutical manufacturing and medical equipment distribution centers
- Fast-moving consumer goods and retail logistics management departments
- Industrial machinery manufacturing and aftermarket spare parts hubs

Learning Objectives

By the end of this course, participants will be able to:



- Design automated identification architectures using RFID standards, sensor data feeds, and warehouse management integration.
- Apply quantitative techniques for inventory control optimization, safety stock sizing, and shrinkage mitigation.
- Deploy simulation models for mobile supply chain event management and real-time operational tracking.
- Construct flexible network topologies utilizing multi-agent systems and decentralized decision-making principles.
- Design multi-product reverse logistics networks that balance remanufacturing economics with sustainability requirements.
- Synchronize production and logistics flows using lean manufacturing principles and value stream mapping.
- Mitigate operational disruptions using supplier diversification models, scenario testing, and resilience metrics.
- Implement available-to-promise and capable-to-promise scheduling rules to align supply capacity with customer demand.

Course Agenda

Day 1: RFID and Auto-ID Technologies in Logistics Networks

- Fundamentals of passive and active RFID protocols across distribution facilities
- Systems architecture for integrating auto-ID hardware with ERP and WMS environments
- Deployment models across inbound receiving, yard operations, and outbound sorting
- Communication protocols, middleware architecture, and tag reading reliability metrics
- Capital expenditure and operating cost models for auto-ID infrastructure investment
- Technical constraints, signal interference, and mitigation procedures in metal or liquid environments
- Operational Review: Assessing facility readiness and tracking requirements for automated identification

Day 2: RFID Analytics and Inventory Optimization

- Data collection frameworks for serialized product visibility and location auditing
- Quantitative metrics for measuring auto-ID operational value across warehouse nodes
- Inventory record reconciliation and location accuracy verification methods
- Inventory control optimization leveraging continuous cycle data and movement signals
- Shrinkage containment protocols, misplaced stock recovery, and loss tracking
- Operational review of auto-ID inventory case models across high-density facilities
- Operational Review: Formulating automated stock counting workflows and accuracy thresholds

Day 3: Mobile Supply Chains and Digital Integration

- Architecture of mobile supply chain event management and exception handling workflows
- Sensor deployment, internet of things platforms, and real-time shipment monitoring
- Simulation methodologies for evaluating mobile asset utilization and freight transit
- Data integration pipelines connecting transport execution tools and enterprise platforms
- Cloud-based supply chain management systems and cross-enterprise visibility portals
- Data security standards, access governance, and transmission protocols in connected logistics
- Operational Review: Designing event triggers and automated alerts for operational exceptions

Day 4: Agile Supply Chain Design and Network Innovation

- Structural tenets of agile network design and rapid-response fulfillment channels
- Agent-based computational modeling for evaluating volatile demand patterns
- Configuring distribution channels across heterogeneous operational environments
- Adaptive network optimization and multi-facility decision-making models
- Product modularization strategies and postponement principles for late-stage customization
- Performance measurement frameworks for agile response times and schedule adherence
- Operational Review: Assessing agility gaps across regional distribution footprints

Day 5: Reverse Logistics and Circular Value Chains

- Architectural principles of closed-loop supply chains and reverse material flows
- Network design algorithms for collection centers, inspection yards, and sorting facilities
- Economic modeling for product return grading, component harvesting, and remanufacturing
- Value chain realignment models for institutional asset recovery and disposition
- Emerging circular models for commercial waste reduction and raw material reclamation
- Digital traceability platforms for tracking returned assets, warranty claims, and salvage value
- Operational Review: Mapping multi-product reverse logistics networks and cost recovery flows

Day 6: Lean Operations and Production Synchronization

- Waste classification across manufacturing lines, buffer stages, and distribution docks
- Value stream mapping protocols for multi-tier industrial production systems
- Synchronized pull replenishment models: Kanban calculation and ConWIP scheduling
- Industrial flow study: Component synchronization across semiconductor and electronics production
- Line balancing techniques and takt time alignment between fabrication and assembly
- Kaizen project charters for bottleneck mitigation and throughput maximization
- Operational Review: Evaluating production value stream maps to eliminate buffer inventory

Day 7: Decentralized Networks and Intelligent Planning

- Structural trade-offs between centralized hubs and distributed local fulfillment networks
- Multi-agent coordination algorithms for distributed replenishment decisions
- Dynamic lot-sizing formulas: Silver-Meal, Wagner-Whitin, and Part-Period balancing
- Vendor managed inventory governance, information sharing agreements, and min-max boundaries
- Freight route consolidation and multi-stop dispatching within distributed networks
- Decision support models for autonomous stock rebalancing across regional warehouses
- Operational Review: Modeling safety stock impacts under centralized versus decentralized topologies

Day 8: Managing Supply Chain Uncertainty and Risk

- Taxonomy of operational, financial, and environmental supply chain disruptions
- Quantitative disruption modeling using probabilistic lead times and failure modes
- Supplier diversification algorithms and dual-sourcing allocation models
- Structural network robustness analysis using node criticality and edge vulnerability indices
- Scenario analysis and discrete-event simulation for disaster preparedness
- Frameworks for resilient supply chain networks and rapid recovery scheduling
- Operational Review: Constructing disruption mitigation plans using supplier risk indices

Day 9: Performance Optimization and Network Benchmarking

- Operational benefits of lead time compression and uncertainty elimination across trade lanes
- Structural analysis of international logistics models and cross-border transport corridors
- Supply chain scorecard architecture: OTIF, cash-to-cash cycle, and asset turnover metrics
- Empirical benchmarking protocols for transportation efficiency and warehousing unit costs
- Designing executive performance cockpits and interactive operational dashboards
- Continuous process tuning through structured data-driven variance audits
- Operational Review: Establishing multi-tier operational KPI dashboards with root cause diagnostics

Day 10: Availability Management and Demand Fulfilment

- Core mechanisms of Available-to-Promise ATP and Capable-to-Promise CTP logic
- Multi-level allocation algorithms across constrained production lines and inventory pools
- Order promising systems architecture and real-time customer commit engines
- Aligning operational capacity, supplier commitments, and sales forecasting
- Evaluation of algorithmic demand forecasting and automated replenishment developments
- Capstone network synthesis: Integrating tracking, agile design, and capacity models
- Operational Review: Formulating an end-to-end operational execution roadmap for enterprise deployment

Practical Exercises

Participants complete applied engineering tasks to model network parameters and resolve operational disruptions.



- Design an auto-ID location layout to track material movements across receiving, staging, and dispatch areas.
- Formulate a multi-echelon inventory policy using dynamic lot-sizing and lead-time variability formulas.
- Construct a reverse logistics network plan calculating consolidation points and remanufacturing yields.
- Build an operational resilience matrix assessing supplier concentration risks and secondary replenishment paths.

FAQs

What technical background is required for this course?

Participants should have a foundational understanding of operational workflows, inventory terminology, and basic spreadsheet analysis. The course introduces engineering models and quantitative frameworks systematically.

How does the course address real-time tracking implementations?

The sessions examine hardware selection, middleware architecture, tag placement physics, and software integration across warehouse and transport environments without endorsing proprietary vendors.

Are reverse logistics frameworks applicable to regulated manufacturing?

Yes. The methodologies address regulatory traceability, serialized tracking, component remanufacturing criteria, and environmental compliance across industrial, medical, and electronic sectors.

Conclusion

Supply chain engineering provides the analytical precision needed to stabilize logistics networks against market disruption and operational friction. By mastering tracking systems, agile inventory strategies, and demand fulfillment architectures, professionals build operational workflows that protect delivery commitments and optimize resource utilization across the enterprise.