Smart Production Scheduling in Manufacturing Training Course

Professional Development Training Course Outline

Category	Manufacturing	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Smart Production Scheduling in Manufacturing Training Course is designed to equip professionals with advanced capabilities in AI-driven planning, Industry 4.0 integration, and real-time production optimization. In today's competitive manufacturing landscape, organizations must respond rapidly to demand fluctuations, supply chain disruptions, and resource constraints. This course focuses on transforming traditional scheduling systems into intelligent, data-powered, and automated production planning ecosystems using cutting-edge technologies such as Advanced Planning and Scheduling (APS), Machine Learning, IoT-enabled MES systems, and Digital Twins.

Manufacturers are increasingly adopting lean manufacturing, predictive analytics, and smart factory frameworks to improve efficiency, reduce downtime, and maximize throughput. This training provides hands-on expertise in building resilient scheduling models that align with just-in-time production, capacity optimization, bottleneck analysis, and real-time decision-making. Participants will learn how to integrate ERP systems with modern scheduling tools, enabling end-to-end visibility and agility across the production lifecycle.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Master AI-powered production scheduling optimization
2. Understand Industry 4.0 smart factory ecosystems
3. Apply Advanced Planning and Scheduling (APS) systems
4. Implement real-time manufacturing execution systems (MES)
5. Optimize production capacity planning and load balancing
6. Reduce downtime using predictive maintenance scheduling
7. Enhance efficiency through lean manufacturing principles
8. Integrate IoT-enabled smart manufacturing systems
9. Develop constraint-based scheduling models
10. Improve agility with demand-driven production planning
11. Use digital twin simulation for production forecasting
12. Align scheduling with supply chain synchronization
13. Achieve cost reduction and throughput maximization strategies

Target Audience

- Production Planning Managers
- Manufacturing Engineers
- Operations Managers
- Supply Chain Analysts
- Industrial Engineers
- ERP/MES System Consultants
- Plant Supervisors
- Continuous Improvement & Lean Specialists

Course Modules

Module 1: Foundations of Smart Manufacturing Scheduling

- Introduction to production scheduling systems
- Traditional vs smart scheduling models
- Role of Industry 4.0 in manufacturing
- Key KPIs in production planning
- Scheduling challenges in modern factories
- **Case Study:** Transition from manual scheduling to digital APS in an automotive plant

Module 2: Advanced Planning and Scheduling (APS) Systems

- APS architecture and components
- Finite vs infinite scheduling models
- Constraint-based optimization techniques
- Real-time scheduling adjustments
- ERP-APS integration workflows
- **Case Study:** APS implementation in an electronics manufacturing company

Module 3: AI and Machine Learning in Scheduling

- Predictive scheduling using ML algorithms
- Demand forecasting models
- Reinforcement learning for optimization
- Pattern recognition in production delays
- Automated decision-making systems
- **Case Study:** AI-driven scheduling in a textile manufacturing facility

Module 4: IoT and Smart Factory Integration

- IoT sensors in production lines
- Real-time data acquisition systems
- Machine connectivity and monitoring
- Smart alerts and automation triggers
- Data-driven scheduling updates
- **Case Study:** IoT-enabled scheduling in a food processing plant

Module 5: Lean Manufacturing and Bottleneck Optimization

- Lean principles in scheduling
- Waste reduction strategies
- Bottleneck identification methods
- Cycle time optimization
- Continuous improvement frameworks
- **Case Study:** Lean scheduling transformation in a steel manufacturing unit

Module 6: Digital Twin and Simulation Modeling

- Digital twin concepts in manufacturing
- Virtual production simulation
- Scenario-based scheduling analysis
- Risk assessment in production plans
- Real-time simulation adjustments
- **Case Study:** Digital twin deployment in an aerospace production line

Module 7: Supply Chain and Demand-Driven Scheduling

- Demand-driven MRP systems
- Supply chain synchronization techniques
- Inventory-production alignment
- Agile response to market changes
- End-to-end visibility frameworks
- **Case Study:** Demand-driven scheduling in a consumer goods company

Module 8: Smart Factory Implementation Strategy

- Roadmap to smart manufacturing transformation
- MES-ERP integration strategy
- Change management in production systems
- Cyber-physical production systems
- ROI measurement and performance tracking
- **Case Study:** Full smart factory rollout in a pharmaceutical manufacturing plant

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

Ready to enroll or request a customized program? Book online or contact us:

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