Advanced Capacity Planning in Manufacturing Training Course

Professional Development Training Course Outline

Category	Manufacturing	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Advanced Capacity Planning in Manufacturing is a critical discipline that enables organizations to align production capability with demand variability, supply chain constraints, and operational efficiency goals. In today’s fast-paced, data-driven industrial environment, manufacturers must leverage advanced forecasting models, AI-driven planning tools, and real-time production analytics to optimize throughput, minimize bottlenecks, and reduce operational costs. Advanced Capacity Planning in Manufacturing Training Course is designed to equip professionals with cutting-edge strategies in capacity utilization, finite scheduling, and demand-supply balancing to achieve world-class manufacturing performance.

With increasing global competition, digital transformation, and Industry 4.0 adoption, capacity planning has evolved into a strategic function rather than a tactical task. This course integrates modern methodologies such as predictive analytics, ERP-integrated planning systems, lean manufacturing principles, and constraint-based scheduling. Participants will gain practical insights into improving production agility, enhancing resource allocation, and building resilient manufacturing systems that respond effectively to market fluctuations and supply chain disruptions.

Programme Curriculum

Advanced Capacity Planning in Manufacturing Training Course

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10 days

Course Objectives

1. Master advanced capacity planning optimization techniques
2. Understand demand forecasting and predictive analytics in manufacturing
3. Apply finite and infinite capacity scheduling models
4. Optimize production throughput and bottleneck management
5. Implement AI-driven manufacturing planning systems
6. Develop expertise in ERP-integrated capacity planning
7. Improve supply chain synchronization and resilience
8. Apply lean manufacturing and waste reduction strategies
9. Enhance resource allocation and utilization efficiency
10. Design real-time production monitoring dashboards
11. Strengthen constraint-based planning and Theory of Constraints (TOC)
12. Build capability in what-if scenario simulation and modeling
13. Improve decision-making using data-driven manufacturing intelligence

Target Audience

- Production Managers
- Operations Managers
- Supply Chain Analysts
- Manufacturing Engineers
- Plant Supervisors
- Industrial Engineers
- ERP System Analysts
- Continuous Improvement Specialists

Course Modules

Module 1: Fundamentals of Capacity Planning

- Capacity types: design, effective, actual
- Role in manufacturing strategy
- Key performance indicators (KPIs)
- Load vs capacity balancing
- Planning horizons in operations
- **Case Study:** A mid-size auto parts manufacturer reducing idle capacity by 18%

Module 2: Demand Forecasting Techniques

- Time-series forecasting models
- AI/ML-based demand prediction
- Seasonality and trend analysis
- Forecast accuracy improvement methods
- Integration with production planning
- **Case Study:** FMCG firm improving forecast accuracy by 25%

Module 3: Production Scheduling Systems

- Master production scheduling (MPS)
- Job shop vs flow shop scheduling
- Priority rule techniques
- Bottleneck scheduling optimization
- Real-time scheduling adjustments
- **Case Study:** Electronics manufacturer reducing delays by 30%

Module 4: Finite Capacity Planning

- Resource-constrained scheduling
- Work center balancing
- Load leveling techniques
- Capacity smoothing strategies
- Constraint identification methods
- **Case Study:** Textile plant optimizing machine utilization

Module 5: Infinite Capacity Planning

- Theoretical capacity planning models
- Aggregate planning approaches
- Limitations and risks
- Hybrid planning systems
- Production scaling strategies
- **Case Study:** Beverage company scaling production for peak demand

Module 6: Bottleneck Management (TOC)

- Theory of Constraints principles
- Identifying system bottlenecks
- Drum-buffer-rope scheduling
- Throughput optimization
- Continuous improvement cycles
- **Case Study:** Automotive assembly line throughput increase by 22%

Module 7: ERP-Based Capacity Planning

- ERP module integration
- Real-time data synchronization
- Production order management
- Resource planning automation
- System configuration best practices

- **Case Study:** ERP rollout reducing planning errors by 40%

Module 8: Lean Manufacturing Integration

- Waste elimination strategies
- Just-in-Time (JIT) production
- Value stream mapping
- Continuous flow systems
- Kaizen implementation
- **Case Study:** Lean transformation in packaging industry

Module 9: Advanced Analytics in Capacity Planning

- Predictive analytics models
- Big data in manufacturing
- Dashboarding and visualization
- KPI tracking systems
- Machine learning applications
- **Case Study:** Smart factory improving efficiency by 28%

Module 10: Supply Chain Coordination

- End-to-end supply planning
- Vendor capacity alignment
- Inventory synchronization
- Logistics optimization
- Risk mitigation strategies
- **Case Study:** FMCG supply chain disruption recovery model

Module 11: Resource Optimization Techniques

- Machine and labor balancing
- Shift optimization models
- Multi-resource scheduling
- Cost efficiency analysis
- Capacity trade-off decisions
- **Case Study:** Steel plant reducing overtime costs

Module 12: Scenario Planning & Simulation

- What-if analysis techniques
- Digital twin simulation
- Risk modeling approaches
- Capacity stress testing
- Decision tree analysis
- **Case Study:** Pharmaceutical demand surge simulation

Module 13: Real-Time Monitoring Systems

- IoT-enabled tracking systems
- Production dashboards
- KPI alerts and triggers

- Performance analytics
- Smart factory integration
- **Case Study:** Real-time monitoring in electronics manufacturing

Module 14: Demand-Supply Balancing

- Demand shaping strategies
- Production leveling techniques
- Backlog management
- Supply variability handling
- Agile manufacturing systems
- **Case Study:** Consumer goods demand spike management

Module 15: Strategic Capacity Expansion

- Expansion planning models
- Capital investment analysis
- ROI evaluation techniques
- Risk assessment frameworks
- Long-term capacity strategy
- **Case Study:** Greenfield manufacturing plant expansion planning

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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