Data-Driven Lean 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

Data-Driven Lean Manufacturing Training Course is designed to transform traditional production systems into smart, efficient, and analytics-driven manufacturing ecosystems. It integrates Lean Manufacturing principles, Industrial IoT (IIoT), real-time data analytics, predictive maintenance, and continuous improvement strategies to eliminate waste, reduce costs, and maximize operational efficiency. Participants will learn how to leverage KPI dashboards, machine data, and process intelligence to drive measurable improvements across the entire manufacturing value chain.

In today’s highly competitive Industry 4.0 environment, organizations must adopt data-driven decision-making, automation, and lean optimization techniques to stay ahead. This training equips professionals with practical tools such as value stream mapping, Six Sigma analytics, OEE optimization, and smart factory integration. By the end of the course, learners will be capable of building a high-performance lean digital manufacturing system that enhances productivity, quality, and profitability.

Programme Curriculum

Data-Driven Lean Manufacturing Training Course

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Course Objectives

1. Implement Lean Manufacturing principles for waste reduction
2. Apply Data-Driven Decision Making in production systems
3. Optimize Overall Equipment Effectiveness (OEE) using analytics
4. Integrate Industrial IoT (IIoT) in manufacturing operations
5. Develop real-time production monitoring dashboards
6. Enhance process efficiency through predictive analytics
7. Conduct Value Stream Mapping (VSM) with digital tools
8. Improve quality control using Six Sigma and data insights
9. Reduce downtime through predictive maintenance strategies
10. Strengthen continuous improvement (Kaizen) culture
11. Apply statistical process control (SPC) techniques
12. Enable smart factory transformation and automation
13. Drive cost reduction and productivity optimization

Target Audience

1. Manufacturing Engineers
2. Production Managers
3. Operations Managers
4. Industrial Engineers
5. Quality Assurance Professionals
6. Supply Chain Analysts
7. Lean Six Sigma Practitioners
8. Plant Supervisors and Executives

Course Modules

Module 1: Foundations of Lean Manufacturing & Data Integration

- Lean principles: waste elimination (Muda, Mura, Muri)
- Introduction to data-driven manufacturing systems
- Role of KPIs in operational excellence
- Basics of smart manufacturing ecosystems
- Linking Lean with digital transformation
- **Case Study:** Toyota Production System optimization using real-time production data to reduce cycle time by 22%.

Module 2: Industrial IoT (IIoT) in Manufacturing

- Sensor integration in production lines
- Machine-to-machine communication systems
- Real-time data acquisition methods

- Cloud-based manufacturing analytics
- IIoT architecture in smart factories
- **Case Study:** Siemens factory implemented IIoT sensors to reduce unplanned downtime by 30%.

Module 3: Data Analytics for Production Optimization

- Descriptive vs predictive analytics
- Manufacturing data visualization techniques
- Identifying bottlenecks using analytics
- Root cause analysis using big data
- Dashboard creation for decision-making
- **Case Study:** General Electric improved production throughput using predictive analytics dashboards.

Module 4: Value Stream Mapping (VSM) with Digital Tools

- Digital VSM techniques
- Identifying value-added vs non-value-added activities
- Process flow optimization
- Cycle time reduction strategies
- Lean mapping software applications
- **Case Study:** Ford reduced process waste by 18% using digital value stream mapping.

Module 5: Predictive Maintenance & Reliability Engineering

- Condition-based monitoring systems
- Machine failure prediction models
- Maintenance scheduling optimization
- AI-based equipment diagnostics
- Spare parts inventory optimization
- **Case Study:** Rolls-Royce improved engine reliability using predictive maintenance analytics.

Module 6: Six Sigma & Statistical Process Control (SPC)

- DMAIC methodology in manufacturing
- Control charts and process variation
- Defect reduction strategies
- Process capability analysis
- Quality improvement frameworks
- **Case Study:** Motorola achieved 99.999% quality improvement using Six Sigma analytics.

Module 7: Smart Factory & Automation Systems

- Automation in lean manufacturing
- Robotics and AI integration
- Digital twin technology
- Cyber-physical production systems
- Smart factory architecture design
- **Case Study:** Bosch implemented smart factory systems leading to 20% productivity increase.

Module 8: Continuous Improvement & Lean Transformation Strategy

- Kaizen implementation strategies

- Employee engagement in Lean culture
- Performance measurement systems
- Lean maturity assessment models
- Scaling Lean across organizations
- **Case Study:** Nike transformed its global manufacturing network using continuous improvement programs.

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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Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com