Lean Six Sigma Black Belt 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

The Lean Six Sigma Black Belt in Manufacturing Training Course is a highly advanced, industry-focused certification program designed to develop world-class process improvement leaders capable of driving operational excellence, waste reduction, and defect-free manufacturing systems. Lean Six Sigma Black Belt in Manufacturing Training Course integrates the powerful methodologies of Lean Manufacturing, Six Sigma DMAIC, statistical process control (SPC), and continuous improvement strategies to transform professionals into data-driven problem solvers and strategic decision-makers in modern production environments.

In today’s competitive manufacturing landscape, organizations demand professionals who can lead process optimization, cost reduction, quality enhancement, and productivity improvement initiatives. This course equips participants with advanced tools such as Minitab, root cause analysis, value stream mapping, Kaizen, and advanced statistical modeling, enabling them to lead high-impact projects that align with global standards like ISO 9001, World Class Manufacturing (WCM), and Industry 4.0 transformation.

Programme Curriculum

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Course Objectives

1. Master Lean Six Sigma DMAIC methodology for manufacturing excellence
2. Apply advanced statistical analysis and hypothesis testing for process control
3. Lead end-to-end continuous improvement and operational excellence projects
4. Implement waste elimination techniques (Muda, Mura, Muri) in production systems
5. Develop expertise in Root Cause Analysis (RCA) and Failure Mode Effects Analysis (FMEA)
6. Optimize manufacturing cycle time and throughput efficiency
7. Improve quality management systems and defect reduction strategies
8. Design lean production systems using Value Stream Mapping (VSM)
9. Enhance supply chain and inventory optimization in manufacturing
10. Drive cost reduction and profit maximization initiatives
11. Utilize SPC, control charts, and process capability analysis (Cp, Cpk)
12. Lead cross-functional teams in Six Sigma Black Belt projects
13. Align manufacturing processes with Industry 4.0, smart factory, and digital transformation trends

Target Audience

1. Manufacturing Engineers
2. Quality Assurance & Quality Control Professionals
3. Production Managers & Supervisors
4. Industrial Engineers
5. Process Improvement Specialists
6. Supply Chain & Operations Managers
7. Six Sigma Green Belts aspiring for Black Belt certification
8. Continuous Improvement & Lean Manufacturing Professionals

Course Modules

Module 1: Lean Six Sigma Foundations & DMAIC Mastery

- Introduction to Lean & Six Sigma integration
- DMAIC framework (Define, Measure, Analyze, Improve, Control)
- Project selection and charter development
- Voice of Customer (VOC) analysis
- KPI alignment with manufacturing goals
- **Case Study:** Reduction of defect rate in an automotive assembly line using DMAIC

Module 2: Advanced Statistical Analysis & Minitab Application

- Descriptive & inferential statistics
- Hypothesis testing and regression analysis

- ANOVA in manufacturing processes
- Probability distributions in quality control
- Minitab software for data-driven decisions
- **Case Study:** Reducing machine downtime using statistical correlation analysis

Module 3: Lean Manufacturing & Waste Elimination

- 8 types of waste (DOWNTIME)
- Kaizen continuous improvement culture
- 5S workplace organization system
- Just-In-Time (JIT) production system
- Value-added vs non-value-added activities
- **Case Study:** Warehouse efficiency improvement through 5S implementation

Module 4: Root Cause Analysis & Problem Solving Tools

- 5 Whys technique
- Fishbone (Ishikawa) diagram
- Failure Mode and Effects Analysis (FMEA)
- Pareto analysis (80/20 rule)
- Corrective and preventive actions (CAPA)
- **Case Study:** Eliminating recurring defects in packaging line using RCA tools

Module 5: Statistical Process Control (SPC)

- Control charts (X-bar, R, P charts)
- Process capability (Cp, Cpk, Pp, Ppk)
- Process stability analysis
- Variation reduction strategies
- Real-time monitoring systems
- **Case Study:** Improving process stability in injection molding operations

Module 6: Value Stream Mapping & Process Optimization

- Current state vs future state mapping
- Bottleneck identification techniques
- Lead time reduction strategies
- Flow optimization in production lines
- Lean layout design principles
- **Case Study:** Redesigning production flow in a FMCG bottling plant

Module 7: Advanced Lean Six Sigma Project Execution

- Black Belt project lifecycle management
- Stakeholder management & communication
- Financial impact analysis (Cost-Benefit)
- Risk management in improvement projects
- Change management strategies
- **Case Study:** Multi-department cost reduction project in a pharmaceutical plant

Module 8: Industry 4.0 & Smart Manufacturing Integration

- Digital transformation in manufacturing
- IoT-enabled process monitoring
- Predictive maintenance analytics
- AI & machine learning in quality control
- Smart factory implementation strategies
- **Case Study:** Predictive maintenance implementation reducing equipment failure in CNC machining

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