Integration of Lean & Industry 4.0 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 Integration of Lean Manufacturing and Industry 4.0 represents a transformative shift in modern production systems, combining waste elimination, process optimization, automation, data-driven decision-making, IoT, AI, and smart factory technologies. Integration of Lean & Industry 4.0 in Manufacturing Training Course is designed to equip professionals with the ability to align Lean principles (5S, Kaizen, Value Stream Mapping, Just-in-Time) with cutting-edge digital manufacturing technologies such as cyber-physical systems, predictive analytics, digital twins, and industrial IoT (IIoT). Participants will gain practical knowledge on how to build smart, agile, and highly efficient manufacturing ecosystems that reduce cost, improve quality, and increase productivity.

As global industries move toward Industry 4.0 smart factories, organizations must bridge the gap between traditional Lean practices and digital transformation strategies. This course provides a structured pathway to achieve operational excellence, real-time visibility, end-to-end supply chain integration, and intelligent automation. Learners will understand how to leverage big data analytics, machine learning, robotics process automation (RPA), and cloud-based manufacturing systems to create resilient and future-ready production environments.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Master Lean Manufacturing principles & waste reduction techniques
2. Understand Industry 4.0 smart factory ecosystem
3. Apply Value Stream Mapping (VSM) with digital tools
4. Implement Industrial IoT (IIoT) in production systems
5. Integrate AI-driven predictive maintenance strategies
6. Optimize operations using real-time data analytics
7. Develop cyber-physical manufacturing systems
8. Enhance productivity through automation and robotics integration
9. Enable digital twin-based process simulation
10. Improve supply chain efficiency using smart logistics systems
11. Apply Kaizen and continuous improvement in digital environments
12. Build data-driven decision-making capabilities
13. Achieve end-to-end smart manufacturing transformation

Target Audience

1. Manufacturing Engineers
2. Industrial Engineers
3. Production Managers
4. Plant Supervisors
5. Operations Managers
6. Supply Chain Professionals
7. Quality Assurance Specialists
8. Automation and Robotics Engineers

Course Modules

Module 1: Foundations of Lean Manufacturing & Industry 4.0

- Lean principles: 5S, Kaizen, JIT
- Evolution from Industry 1.0 to 4.0
- Smart manufacturing ecosystem overview
- Waste identification in modern factories
- Lean vs digital transformation synergy

- **Case Study:** Toyota Production System digital evolution using IoT dashboards

Module 2: Value Stream Mapping (VSM) with Digital Tools

- Traditional vs digital VSM
- Process flow optimization
- Bottleneck identification using analytics
- Real-time mapping software tools
- Lead time reduction strategies
- **Case Study:** Bosch digital VSM implementation reducing cycle time by 30%

Module 3: Industrial IoT (IIoT) in Smart Manufacturing

- IoT sensors in production lines
- Machine-to-machine communication
- Real-time monitoring systems
- Data acquisition and integration
- Edge computing applications
- **Case Study:** Siemens IIoT-enabled predictive factory model

Module 4: AI & Predictive Maintenance

- Machine learning in manufacturing
- Failure prediction models
- Condition-based monitoring
- Downtime reduction strategies
- Maintenance automation systems
- **Case Study:** General Electric predictive maintenance saving millions in downtime costs

Module 5: Digital Twin Technology

- Concept of digital twin systems
- Virtual simulation of factories
- Real-time synchronization with assets
- Process optimization using simulations
- Product lifecycle management integration
- **Case Study:** Airbus digital twin aircraft production optimization

Module 6: Smart Automation & Robotics

- Industrial robotics applications
- Collaborative robots (Cobots)
- Automated material handling systems
- RPA in manufacturing processes
- Human-machine collaboration
- **Case Study:** Tesla automated production line efficiency enhancement

Module 7: Data Analytics & Smart Decision Systems

- Big data in manufacturing
- KPI dashboards and visualization
- Predictive analytics applications

- Cloud-based manufacturing systems
- Decision intelligence frameworks
- **Case Study:** Amazon smart warehouse analytics optimization

Module 8: Lean-Industry 4.0 Integration Strategy

- Lean digital transformation roadmap
- Smart factory implementation models
- Change management strategies
- KPI-driven continuous improvement
- Sustainability in smart manufacturing
- **Case Study:** BMW smart factory integration reducing waste by 40%

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:

Register Online Now

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