# Smart Factory Design & Implementation 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 Factory Design & Implementation in Manufacturing training course is focused on enabling organizations to transition into the era of Industry 4.0, smart manufacturing, and digitally connected production systems. It equips professionals with advanced knowledge in Industrial IoT (IIoT), automation technologies, AI-driven manufacturing, digital twins, and cyber-physical systems that are transforming global manufacturing ecosystems. Participants gain practical insights into building intelligent factories that enhance productivity, reduce downtime, and optimize end-to-end operations.

This training is designed to bridge the gap between traditional manufacturing and next-generation intelligent factories. It emphasizes real-world implementation strategies involving MES integration, ERP synchronization, predictive maintenance, edge computing, and robotics automation. By leveraging data-driven decision-making and smart connectivity, organizations can achieve operational excellence, energy efficiency, and scalable digital transformation across production lines.

## Programme Curriculum

**Smart Factory Design & Implementation in Manufacturing Training Course**

**Introduction**

Smart Factory Design & Implementation in Manufacturing training course is focused on enabling organizations to transition into the era of Industry 4.0, smart manufacturing, and digitally connected production systems. It equips professionals with advanced knowledge in Industrial IoT (IIoT), automation technologies, AI-driven manufacturing, digital twins, and cyber-physical systems that are transforming global manufacturing ecosystems. Participants gain practical insights into building intelligent factories that enhance productivity, reduce downtime, and optimize end-to-end operations.

This training is designed to bridge the gap between traditional manufacturing and next-generation intelligent factories. It emphasizes real-world implementation strategies involving MES integration, ERP synchronization, predictive maintenance, edge computing, and robotics automation. By leveraging data-driven decision-making and smart connectivity, organizations can achieve operational excellence, energy efficiency, and scalable digital transformation across production lines.

**Course Duration**

5 days

**Course Objectives**

1. Understand Industry 4.0 architecture and smart manufacturing ecosystems
2. Design scalable smart factory frameworks using IIoT technologies
3. Implement digital twin simulation models for production optimization
4. Apply AI and machine learning in manufacturing analytics
5. Enable predictive maintenance strategies using real-time sensor data
6. Integrate MES (Manufacturing Execution Systems) with ERP platforms
7. Develop automation and robotics integration strategies
8. Optimize cyber-physical production systems (CPPS)
9. Strengthen OT/IT convergence in manufacturing environments
10. Implement edge computing and cloud manufacturing solutions
11. Improve operational efficiency through data-driven decision systems
12. Enhance cybersecurity in smart factory infrastructure
13. Build a complete digital transformation roadmap for manufacturing

**Target Audience**

1. Manufacturing Engineers & Plant Managers
2. Industrial Automation Engineers
3. Production & Operations Managers
4. Mechanical & Electrical Engineers
5. IT/OT Integration Specialists
6. Supply Chain & Logistics Professionals
7. Industry 4.0 Consultants & Analysts
8. Technical Project Managers in Manufacturing

**Course Modules**

**Module 1: Industry 4.0 & Smart Manufacturing Foundations**

- Evolution from Industry 1.0 to 4.0
- Core principles of smart manufacturing
- Cyber-physical systems overview
- Role of connectivity in modern factories
- Digital transformation frameworks
- **Case Study:** Siemens Amberg Electronics Factory transformation into a highly automated smart production facility.

**Module 2: Industrial IoT (IIoT) Architecture & Connectivity**

- IIoT sensors and smart devices

- Industrial communication protocols (OPC UA, MQTT)
- Edge vs cloud computing models
- Real-time data acquisition systems
- Machine-to-machine (M2M) communication
- **Case Study:** GE Brilliant Factory leveraging IIoT for real-time production monitoring.

**Module 3: Digital Twin Technology in Manufacturing**

- Concept of digital twins
- Simulation of production lines
- Predictive modeling techniques
- Virtual commissioning of factories
- Real-time synchronization with physical assets
- **Case Study:** Boeing's use of digital twin technology in aircraft manufacturing optimization.

**Module 4: Automation, Robotics & Smart Production Lines**

- Industrial robotics integration
- PLC and SCADA systems
- Autonomous production lines
- Human-robot collaboration (HRC)
- Flexible manufacturing systems
- **Case Study:** Tesla Gigafactory automation and robotics-driven assembly lines.

**Module 5: AI, Machine Learning & Predictive Analytics**

- AI applications in manufacturing
- Machine learning for defect detection
- Predictive maintenance algorithms
- Quality control automation
- Real-time production optimization
- **Case Study:** Foxconn's AI-driven defect detection system in electronics manufacturing.

**Module 6: MES, ERP Integration & Data Management**

- MES architecture and functions
- ERP synchronization in factories
- Production planning and scheduling systems
- Data flow management in manufacturing
- Real-time dashboards and KPIs
- **Case Study:** Nestlé smart factory MES-ERP integration for global production efficiency.

**Module 7: Cybersecurity in Smart Factories**

- OT/IT security convergence
- Industrial network security frameworks
- Risk mitigation strategies
- Secure IoT device management
- Data protection in connected environments
- **Case Study:** Schneider Electric cybersecurity framework implementation in smart plants.

**Module 8: Smart Factory Implementation Roadmap**

- Digital transformation planning
- Change management strategies
- ROI analysis for smart factories
- Scaling Industry 4.0 solutions
- Continuous improvement frameworks
- **Case Study:** Bosch Industry 4.0 roadmap deployment across global manufacturing units.

### 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