Maintenance Automation Systems 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

The Maintenance Automation Systems in Manufacturing Training Course is a comprehensive, industry-aligned program designed to equip learners with cutting-edge skills in Industry 4.0 maintenance technologies, smart manufacturing systems, predictive analytics, and automated asset management. As global manufacturing shifts toward AI-driven operations, IoT-enabled factories, and digital twin ecosystems, maintenance automation has become a critical pillar for ensuring productivity, reducing downtime, and optimizing asset lifecycle performance.

Maintenance Automation Systems in Manufacturing Training Course provides a deep dive into modern maintenance strategies such as predictive maintenance (PdM), preventive maintenance automation, condition-based monitoring, and AI-powered fault detection systems. Learners will gain practical expertise in deploying CMMS (Computerized Maintenance Management Systems), SCADA integration, machine learning for equipment diagnostics, and IIoT sensor networks, enabling them to transform traditional maintenance operations into fully automated, data-driven ecosystems.

Programme Curriculum

Maintenance Automation Systems in Manufacturing Training Course

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Course Objectives

1. Master Industry 4.0 Maintenance Automation Systems
2. Implement Predictive Maintenance (PdM) using AI & Machine Learning
3. Design IoT-enabled Smart Factory Maintenance Networks
4. Operate advanced CMMS (Computerized Maintenance Management Systems)
5. Apply Condition-Based Monitoring (CBM) Techniques
6. Develop Digital Twin Models for Equipment Diagnostics
7. Integrate SCADA Systems for Real-Time Monitoring
8. Enhance Asset Lifecycle Management using Automation Tools
9. Reduce downtime through Failure Prediction Analytics
10. Implement Robotic Process Automation (RPA) in Maintenance
11. Utilize Big Data Analytics for Equipment Performance Optimization
12. Strengthen Reliability-Centered Maintenance (RCM) Strategies
13. Deploy Cloud-Based Industrial Maintenance Platforms

Target Audience

1. Maintenance Engineers in Manufacturing Plants
2. Industrial Automation Technicians
3. Mechanical & Electrical Engineers
4. Plant Operations Managers
5. Industrial IoT Specialists
6. Reliability Engineers
7. Technical Supervisors in Production Facilities
8. Engineering Students & Graduates in Manufacturing Fields

Course Modules

Module 1: Introduction to Maintenance Automation

- Evolution of maintenance systems
- Industry 4.0 transformation
- Role of automation in manufacturing
- Types of maintenance strategies
- Smart factory overview
- **Case Study:** Transition from manual to automated maintenance in an automotive plant

Module 2: Predictive Maintenance (AI-Based)

- Machine learning for failure prediction

- Sensor data interpretation
- Predictive algorithms
- Vibration & thermal analysis
- Fault forecasting systems
- **Case Study:** AI-based motor failure prediction in FMCG industry

Module 3: Preventive Maintenance Automation

- Scheduled maintenance systems
- Automation triggers
- Workflow optimization
- Maintenance scheduling tools
- Resource allocation automation
- **Case Study:** Automated preventive maintenance in textile manufacturing

Module 4: Condition-Based Monitoring (CBM)

- Real-time monitoring systems
- Sensor integration
- Threshold-based alerts
- Data acquisition systems
- Health indexing models
- **Case Study:** CBM implementation in steel production plant

Module 5: Computerized Maintenance Management Systems (CMMS)

- CMMS architecture
- Work order automation
- Asset tracking systems
- Maintenance reporting dashboards
- KPI tracking tools
- **Case Study:** CMMS deployment in pharmaceutical manufacturing

Module 6: SCADA Systems in Maintenance

- SCADA fundamentals
- Real-time control systems
- Industrial data visualization
- Alarm management systems
- System integration techniques
- **Case Study:** SCADA integration in power plant maintenance

Module 7: Industrial IoT (IIoT) in Maintenance

- Smart sensors and devices
- Edge computing
- Connectivity protocols
- Data streaming systems
- IoT security fundamentals
- **Case Study:** IIoT-enabled predictive maintenance in oil refinery

Module 8: Digital Twin Technology

- Virtual modeling of assets
- Simulation techniques
- Real-time synchronization
- Performance optimization
- Lifecycle prediction
- **Case Study:** Digital twin of assembly line equipment

Module 9: Reliability-Centered Maintenance (RCM)

- Failure mode analysis
- Risk assessment models
- Maintenance prioritization
- System reliability metrics
- Optimization strategies
- **Case Study:** RCM strategy in aerospace manufacturing

Module 10: Robotic Process Automation (RPA)

- Automation of maintenance tasks
- Workflow bots
- Data entry automation
- Alert systems
- Integration with CMMS
- **Case Study:** RPA implementation in electronics manufacturing maintenance

Module 11: Big Data Analytics in Maintenance

- Data collection frameworks
- Predictive analytics models
- Pattern recognition
- Dashboard reporting
- Data-driven decision-making
- **Case Study:** Big data optimization in cement industry

Module 12: Cloud-Based Maintenance Systems

- Cloud infrastructure
- SaaS maintenance tools
- Remote monitoring systems
- Data storage solutions
- Cybersecurity considerations
- **Case Study:** Cloud CMMS in multinational manufacturing firm

Module 13: Asset Lifecycle Management

- Asset tracking lifecycle
- Depreciation monitoring
- Maintenance cost control
- Replacement planning
- Performance benchmarking
- **Case Study:** Lifecycle optimization in automotive parts production

Module 14: Smart Sensors & Automation Hardware

- Sensor types & applications
- Embedded systems
- Calibration techniques
- Signal processing
- Hardware integration
- **Case Study:** Sensor-driven maintenance in food processing plant

Module 15: Advanced Maintenance Strategy Implementation

- Strategy design frameworks
- Automation roadmap creation
- KPI monitoring systems
- Continuous improvement models
- Future trends in maintenance
- **Case Study:** Full smart factory maintenance transformation project

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

Ready to enroll or request a customized program? Book online or contact us:

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