Reliability-Centered Maintenance 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

Reliability-Centered Maintenance (RCM) is a strategic, data-driven maintenance methodology designed to optimize asset reliability, equipment uptime, and operational efficiency in modern manufacturing environments. With the rise of Industry 4.0, predictive maintenance, IIoT (Industrial Internet of Things), and smart factories, RCM has become a critical framework for reducing downtime, improving Overall Equipment Effectiveness (OEE), and extending asset lifecycle. Reliability-Centered Maintenance in Manufacturing Training Course equips professionals with advanced tools to identify failure modes, prioritize maintenance tasks, and implement cost-effective reliability strategies aligned with global standards such as ISO 55000 Asset Management.

In today’s competitive manufacturing landscape, organizations must shift from reactive maintenance to proactive and predictive maintenance strategies. This RCM training course empowers engineers, maintenance managers, and reliability professionals to build robust maintenance systems using failure mode and effects analysis (FMEA), risk-based maintenance planning, condition monitoring, and digital twin technologies. Participants will gain practical insights into improving plant reliability, reducing maintenance costs, and enhancing production performance through structured RCM implementation.

Programme Curriculum

Reliability-Centered Maintenance in Manufacturing Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Understand fundamentals of Reliability-Centered Maintenance (RCM)
2. Apply Failure Mode and Effects Analysis (FMEA) in manufacturing systems
3. Improve asset reliability and equipment availability
4. Implement predictive maintenance and condition monitoring strategies
5. Enhance Overall Equipment Effectiveness (OEE)
6. Reduce unplanned downtime using root cause analysis (RCA)
7. Integrate IIoT and smart sensors in maintenance planning
8. Develop risk-based maintenance optimization models
9. Align maintenance systems with ISO 55000 asset management standards
10. Optimize maintenance costs through lifecycle asset management
11. Strengthen industrial reliability engineering capabilities
12. Deploy digital transformation in maintenance operations
13. Build sustainable lean maintenance and TPM (Total Productive Maintenance) systems

Target Audience

1. Maintenance Engineers
2. Reliability Engineers
3. Plant Managers
4. Production Supervisors
5. Asset Management Professionals
6. Industrial Engineers
7. Operations Managers
8. Technical Consultants

Course Modules

Module 1: Introduction to Reliability-Centered Maintenance

- Evolution of maintenance strategies (reactive to predictive)
- Core principles of RCM
- Asset criticality assessment
- Maintenance strategy classification
- Reliability vs maintainability concepts

- **Case Study:** Transition from breakdown maintenance to RCM in an automotive assembly plant

Module 2: Failure Mode and Effects Analysis (FMEA)

- Identifying failure modes in equipment
- Risk Priority Number (RPN) calculation
- Failure consequence evaluation
- Critical asset identification
- Prioritization techniques
- **Case Study:** FMEA implementation in a food processing manufacturing line

Module 3: Predictive Maintenance & Condition Monitoring

- Vibration analysis fundamentals
- Thermography and oil analysis
- Sensor-based monitoring systems
- Data-driven maintenance decisions
- Predictive analytics integration
- **Case Study:** Predictive maintenance in a cement manufacturing plant using vibration sensors

Module 4: Root Cause Analysis (RCA) Techniques

- 5 Whys technique
- Fishbone (Ishikawa) analysis
- Failure investigation process
- Corrective action planning
- Continuous improvement loops
- **Case Study:** Eliminating recurring pump failure in a chemical plant

Module 5: Asset Performance & OEE Optimization

- Understanding OEE metrics
- Availability, performance, and quality factors
- Loss identification methods
- Downtime reduction strategies
- KPI-driven maintenance systems
- **Case Study:** Improving OEE in a beverage bottling facility

Module 6: Risk-Based Maintenance Planning

- Risk assessment frameworks
- Criticality ranking systems
- Maintenance prioritization models
- Cost-risk trade-off analysis
- Decision-making tools
- **Case Study:** Risk-based maintenance in an oil refinery system

Module 7: Digital Transformation in Maintenance

- IIoT-enabled maintenance systems
- Digital twin technology
- CMMS (Computerized Maintenance Management Systems)

- Real-time data analytics
- Smart factory integration
- **Case Study:** Digital transformation of maintenance in an electronics manufacturing plant

Module 8: Reliability Engineering & Continuous Improvement

- Reliability growth analysis
- Lean maintenance principles
- TPM implementation strategies
- Lifecycle asset optimization
- Sustainability in maintenance systems
- **Case Study:** TPM rollout in a steel manufacturing plant

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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