Corrosion Monitoring Techniques Training Course

Professional Development Training Course Outline

Category	General Training	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Corrosion remains one of the most critical challenges affecting the integrity, safety, and lifecycle performance of industrial assets across oil & gas, marine, petrochemical, power generation, and infrastructure sectors. Corrosion Monitoring Techniques Training Course is designed to equip professionals with advanced knowledge of corrosion mechanisms, electrochemical monitoring, predictive maintenance strategies, and asset integrity management systems. Participants will gain hands-on understanding of modern corrosion detection technologies, real-time monitoring systems, and data-driven inspection techniques used in high-risk industrial environments.

With increasing global demand for asset reliability, operational safety, ESG compliance, and cost-effective maintenance strategies, corrosion monitoring has become a cornerstone of industrial risk management and reliability engineering. This course integrates theoretical foundations with practical applications, enabling learners to interpret corrosion data, implement mitigation strategies, and optimize integrity management programs (IMP), risk-based inspection (RBI), and condition-based monitoring (CBM) frameworks aligned with international standards.

Programme Curriculum

Corrosion Monitoring Techniques Training Course

Introduction

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Course Duration

5 days

Course Objectives

1. Understand corrosion science fundamentals and electrochemical processes
2. Apply advanced corrosion monitoring techniques and sensor technologies
3. Analyze material degradation mechanisms in harsh environments
4. Implement asset integrity management (AIM) systems
5. Evaluate risk-based inspection (RBI) methodologies
6. Interpret corrosion rate data and predictive analytics
7. Design corrosion prevention and mitigation strategies
8. Use non-destructive testing (NDT) methods for corrosion detection
9. Apply real-time corrosion monitoring systems (RTCM)
10. Integrate digital twin technology for corrosion prediction
11. Develop maintenance optimization and reliability-centered maintenance (RCM) plans
12. Ensure compliance with API, NACE/AMPP, ISO standards
13. Enhance decision-making using AI-driven predictive maintenance tools

Target Audience

1. Corrosion engineers and materials engineers
2. Mechanical and maintenance engineers
3. Asset integrity and inspection specialists
4. Oil & gas upstream/downstream professionals
5. Marine and offshore engineers
6. Power plant and refinery operators
7. Quality assurance and reliability engineers
8. Technical supervisors and plant managers

Course Modules

Module 1: Fundamentals of Corrosion Science

- Electrochemical corrosion principles
- Types of corrosion
- Environmental factors influencing corrosion
- Corrosion thermodynamics and kinetics
- Industry corrosion failures overview
- **Case Study:** Pipeline failure in offshore oil platform due to pitting corrosion

Module 2: Corrosion Monitoring Techniques

- Electrical resistance (ER) probes
- Linear polarization resistance (LPR)
- Ultrasonic thickness measurement
- Hydrogen probes and corrosion coupons
- Online corrosion monitoring systems
- **Case Study:** Refinery corrosion monitoring system reducing shutdown incidents by 35%

Module 3: Non-Destructive Testing (NDT) for Corrosion

- Ultrasonic testing (UT)
- Radiographic testing (RT)
- Magnetic particle inspection (MPI)
- Eddy current testing
- Visual inspection technologies
- **Case Study:** Detection of hidden corrosion in storage tanks using UT scanning

Module 4: Asset Integrity Management (AIM)

- Integrity lifecycle management
- Corrosion management programs (CMP)
- RBI methodologies
- Inspection planning strategies
- Failure mode analysis
- **Case Study:** LNG plant extending asset life through AIM implementation

Module 5: Corrosion Prevention & Control

- Cathodic protection systems
- Coatings and linings
- Chemical inhibitors
- Material selection strategies
- Environmental control techniques
- **Case Study:** Marine vessel hull corrosion reduction using advanced coating systems

Module 6: Digital & Smart Corrosion Monitoring

- IoT-enabled corrosion sensors
- Real-time data acquisition systems
- Digital twin modeling
- AI-based corrosion prediction
- Cloud-based monitoring platforms
- **Case Study:** Smart pipeline monitoring system preventing leakage in real time

Module 7: Risk-Based Inspection (RBI) & Reliability

- Risk assessment methodologies
- Probability of failure analysis
- Consequence modeling
- Inspection interval optimization
- Reliability-centered maintenance (RCM)
- **Case Study:** Petrochemical plant optimizing inspection costs by 28% using RBI

Module 8: Industry Standards & Compliance

- API 571 corrosion mechanisms
- NACE/AMPP standards
- ISO 55000 asset management
- Safety and environmental regulations
- Documentation and reporting systems
- **Case Study:** Compliance upgrade in refinery aligning with API & ISO standards

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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