# Petrochemical Plant Maintenance Strategies Training Course

Professional Development Training Course Outline

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

## Course Introduction

The Petrochemical Plant Maintenance Strategies Training Course is designed to equip professionals with advanced skills in asset integrity management, predictive maintenance, reliability engineering, and turnaround optimization. In modern petrochemical environments, where unplanned downtime, equipment failure, and safety risks directly impact production efficiency and profitability, this training provides critical competencies to implement world-class maintenance strategies aligned with Industry 4.0, digital transformation, and smart plant operations.

This course emphasizes practical and strategic approaches to managing complex petrochemical assets such as refinery units, compressors, turbines, heat exchangers, pipelines, and control systems. Participants will learn how to deploy condition-based monitoring, RCM, TPM, and predictive analytics to improve plant availability, reduce lifecycle costs, and enhance operational safety. Real-world case studies from global petrochemical facilities ensure that learners gain actionable insights that can be immediately applied in high-risk industrial environments.

## Programme Curriculum

**Petrochemical Plant Maintenance Strategies Training Course**

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**Course Duration**

5 days

**Course Objectives**

1. Master Reliability-Centered Maintenance (RCM) strategies for petrochemical assets
2. Implement Predictive Maintenance (PdM) using vibration, thermal, and oil analysis
3. Develop advanced Asset Integrity Management (AIM) systems
4. Reduce unplanned downtime using failure mode and effect analysis (FMEA)
5. Optimize turnaround shutdown planning and execution
6. Apply Root Cause Analysis (RCA) for chronic equipment failures
7. Enhance equipment lifecycle management and cost optimization
8. Integrate Industrial IoT (IIoT) and smart sensors in maintenance systems
9. Improve plant reliability and operational efficiency metrics (OEE)
10. Strengthen risk-based inspection (RBI) methodologies
11. Develop preventive maintenance schedules using CMMS systems
12. Ensure compliance with HSE and process safety management (PSM) standards
13. Build data-driven decision-making using maintenance analytics and AI tools

**Target Audience**

- Maintenance Engineers and Supervisors
- Reliability Engineers
- Mechanical and Process Engineers
- Plant Operations Managers
- Inspection and Integrity Engineers
- Shutdown/Turnaround Managers
- HSE and Safety Officers
- Technical Consultants in Oil & Gas and Petrochemical Industry

**Course Modules**

**Module 1: Petrochemical Plant Asset Fundamentals**

- Overview of refinery and petrochemical equipment systems
- Critical asset classification and prioritization
- Equipment failure behavior patterns
- Maintenance strategy evolution
- Case Study: Crude distillation unit failure reduction strategy

**Module 2: Reliability-Centered Maintenance (RCM)**

- RCM principles and decision logic
- Functional failure analysis

- Maintenance task optimization
- Risk-based maintenance selection
- Case Study: Compressor reliability improvement in gas processing plant

**Module 3: Predictive Maintenance & Condition Monitoring**

- Vibration analysis techniques
- Thermography and infrared inspection
- Oil and wear particle analysis
- Online monitoring systems and sensors
- Case Study: Early bearing failure detection in centrifugal pumps

**Module 4: Root Cause Failure Analysis (RCFA)**

- RCA methodologies
- Failure data collection and interpretation
- Corrective and preventive actions (CAPA)
- Human and system failure analysis
- Case Study: Heat exchanger fouling root cause elimination

**Module 5: Turnaround & Shutdown Management**

- Shutdown planning and scheduling tools
- Critical path method (CPM) application
- Resource allocation and cost control
- Risk management during shutdowns
- Case Study: Refinery turnaround optimization reducing downtime by 20%

**Module 6: Asset Integrity & Risk-Based Inspection (RBI)**

- Corrosion monitoring and control strategies
- Pressure equipment integrity management
- RBI methodologies and implementation
- Inspection planning optimization
- Case Study: Pipeline corrosion failure prevention program

**Module 7: Digital Maintenance & Industry 4.0**

- CMMS and EAM systems integration
- IoT-enabled predictive maintenance
- AI and machine learning in asset management
- Digital twins for petrochemical plants
- Case Study: Smart refinery digital transformation project

**Module 8: Safety, Compliance & Sustainability**

- Process Safety Management (PSM) frameworks
- HSE compliance in maintenance operations
- Environmental risk reduction strategies
- Energy efficiency in maintenance systems
- Case Study: Reduction of flaring incidents through maintenance redesign

### 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 |

| Start Date | End Date | Location | Price |
|---|---|---|---|
| **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