

CERTIFIED RELIABILITY ENGINEER (CRE)

“Mastering Reliability Engineering Principles to Improve Asset Performance, Reduce Risk, and Achieve Operational Excellence”

Schedule

Date	Venue	Fees (Face-to-Face)
20 - 24 Apr 2026	Dubai, UAE	USD 3495 per delegate

► Available delivery methods: Face-to-Face & Online Training

Introduction

Reliability engineering is critical to maintaining the performance, safety, and cost-effectiveness of physical assets in industries ranging from oil and gas to manufacturing and power generation. The Certified Reliability Engineer (CRE) training course prepares professionals to apply quantitative and qualitative tools to evaluate and improve system reliability and asset performance.

This intensive 5-day course follows the Body of Knowledge prescribed by the American Society for Quality (ASQ) and serves as comprehensive preparation for the CRE exam. It also provides practical techniques that can be immediately applied to failure analysis, maintenance strategy, risk assessment, and lifecycle optimization.

Objectives

By the end of this course, participants will be able to:

- Apply reliability engineering principles to enhance asset lifecycle performance
- Use reliability metrics such as MTBF, MTTR, failure rates, and availability
- Conduct root cause analysis (RCA) and failure mode and effects analysis (FMEA)
- Design reliability test plans and perform reliability modeling
- Prepare for the ASQ-CRE certification with aligned technical knowledge

Why Attend

- Become a recognized expert in reliability engineering with global certification
- Learn how to prevent asset failures and reduce unplanned downtime
- Improve decision-making through data-driven failure analysis
- Contribute to sustainable operations, safety, and cost control
- Position yourself for roles in reliability, asset management, and maintenance strategy

Target Audience

This program is designed for:

- Reliability and maintenance engineers
- Asset integrity, mechanical, and process engineers
- Engineering team leaders and planners
- Quality assurance and HSE professionals
- Anyone pursuing ASQ-CRE certification or advanced reliability skills

Individual Benefits

Key competencies that will be developed include:

- Reliability analysis methods (Weibull, exponential, etc.)
- Preventive vs. predictive maintenance strategies
- Lifecycle cost analysis (LCCA) and total productive maintenance (TPM)
- Fault tree analysis (FTA), reliability block diagrams (RBDs), and design for reliability
- Statistical process control and reliability growth modeling

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Improved equipment uptime and plant availability
- Enhanced asset performance and reliability strategies
- Reduced maintenance costs through optimized planning
- Stronger safety compliance and risk mitigation
- A workforce aligned with international reliability engineering standards

Instructional Methodology

The course follows a blended learning approach combining theory with practice:

- Strategy Briefings - CRE Body of Knowledge, reliability principles, and models
- Case Studies - Real-world reliability improvements and RCA examples
- Workshops - FMEA development, data analysis, and system modeling
- Peer Exchange - Industry practices across sectors and environments
- Tools - Templates for RCA, FMEA, LCCA, Weibull analysis, and test planning

Course Outline

Training Hours: 07:30 AM - 03:30 PM Daily Format: 3-4 Learning Modules | Coffee Breaks: 09:30 & 11:15 | Lunch Break: 01:00 - 02:00

Day 1: Reliability Engineering Foundations

- Module 1: Principles of Reliability Engineering (07:30 - 09:30) • Definitions, scope, and role of the reliability engineer • Key metrics: MTBF, MTTR, availability
- Module 2: Reliability Program Planning (09:45 - 11:15) • Establishing a reliability program and data collection systems • Role of leadership and cross-functional teams
- Module 3: Workshop - MTBF & Availability Calculations (11:30 - 01:00) • Analyze case data and calculate key indicators

Day 2: Design for Reliability & Risk Assessment

- Module 4: Failure Mode and Effects Analysis (FMEA) (07:30 - 09:30) • Types of FMEA and application methods • RPN scoring and prioritization
- Module 5: Fault Tree Analysis (FTA) and Reliability Block Diagrams (09:45 - 11:15) • System modeling and failure logic • Reliability architecture design
- Module 6: Workshop - Developing FMEAs and RBDs (11:30 - 01:00) • Create system diagrams and identify failure impacts

Day 3: Reliability Testing & Data Analysis

- Module 7: Reliability Test Design and Planning (07:30 - 09:30) • Test strategies: growth, life, environmental, accelerated • Test-to-failure vs success testing
- Module 8: Statistical Tools and Distributions (09:45 - 11:15) • Normal, exponential, and Weibull analysis • Reliability estimation and confidence intervals
- Module 9: Workshop - Weibull Plotting and Test Interpretation (11:30 - 01:00) • Plot and analyze real or sample failure data

Day 4: Maintenance Strategies and Lifecycle Analysis

- Module 10: Preventive, Predictive & Condition-Based Maintenance (07:30 - 09:30) • PM optimization and P-F curve understanding • Predictive tools and condition monitoring
- Module 11: Lifecycle Cost Analysis and TPM (09:45 - 11:15) • Cost-benefit analysis of reliability improvement initiatives • Total productive maintenance and continuous improvement
- Module 12: Workshop - LCCA Case Study (11:30 - 01:00) • Apply LCCA to real equipment and investment decisions

Day 5: CRE Exam Readiness and Strategy Integration

- Module 13: Review of ASQ-CRE Body of Knowledge (07:30 - 09:30) • Key exam areas and question types • Study tips and resources
- Module 14: Reliability Integration and Culture (09:45 - 11:15) • Embedding reliability in engineering and maintenance culture • KPIs and performance tracking
- Module 15: Final Workshop - Personal Action Plan and Mock Quiz (11:30 - 01:00) • Build a reliability roadmap and test your knowledge

Certification

Participants will receive a Certificate of Completion in Certified Reliability Engineer (CRE), affirming their readiness to implement robust reliability practices and pursue professional certification in accordance with international engineering standards.

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