

FAILURE MODE, EFFECTS & CRITICALITY ANALYSIS (FMECA)

"Mastering FMECA Techniques to Predict Failures, Minimize Risk, and Improve Reliability Across Systems and Processes"

Schedule

Date	Venue	Fees (Face-to-Face)
11 - 12 Feb 2026	Kuwait	USD 1995 per delegate
06 - 07 May 2026	Manama, Bahrain	USD 1995 per delegate
11 - 12 Aug 2026	Doha, Qatar	USD 1995 per delegate
18 - 19 Nov 2026	Dubai, UAE	USD 1995 per delegate

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

Introduction

Failure Mode, Effects & Criticality Analysis (FMECA) is a powerful tool used to proactively identify and prioritize potential failure modes in systems, processes, or equipment. By evaluating their effects and criticality, organizations can mitigate risk, enhance safety, and improve asset reliability.

This practical, hands-on course guides participants through the full FMECA process—covering system breakdown, failure mode identification, severity analysis, occurrence probability, detectability, and the use of risk priority numbers (RPNs). Participants will practice FMECA in real-world scenarios relevant to engineering, maintenance, operations, and design functions.

Objectives

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

- Understand the purpose, scope, and applications of FMECA
- Identify failure modes and their impact on system performance
- Analyze severity, occurrence, and detectability to prioritize risks
- Calculate and interpret Risk Priority Numbers (RPNs) and Criticality Indexes
- Apply FMECA in design, operations, reliability, and maintenance planning

Why Attend

- Reduce the likelihood of costly failures by proactively assessing risk
- Apply structured failure analysis to improve system design and operations
- Integrate FMECA into preventive maintenance, asset management, and safety programs
- Gain practical skills to facilitate cross-functional risk assessments
- Enhance compliance with reliability and risk management standards

Target Audience

This program is designed for:

- Reliability, maintenance, and safety engineers
- Design and quality engineers
- Asset integrity and operations professionals
- Technical managers and engineering team leads
- Anyone involved in equipment, process, or system risk assessments

Individual Benefits

Key competencies that will be developed include:

- Failure mode identification and systems thinking
- Risk assessment and prioritization skills
- Structured problem-solving and preventive planning
- Application of FMECA templates and scoring systems
- Confidence in participating in or leading FMECA workshops

Organizational Benefits

Upon completing the training course, participants will demonstrate:

- Enhanced asset reliability and reduced downtime
- Improved planning of inspections, tests, and preventive maintenance
- More effective risk mitigation and safety planning
- Better design, procurement, and commissioning outcomes
- Standardized documentation and decision-making tools for failure prevention

Instructional Methodology

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

- Strategy Briefings - Core concepts in failure analysis and reliability
- Case Studies - Real examples of FMECA implementation in different industries
- Workshops - Hands-on exercises to build FMECA tables and scoring matrices
- Peer Exchange - Group discussions and team-based analysis
- Tools - FMECA worksheets, RPN calculators, and failure mode databases

Course Outline

DETAILED 2-DAY COURSE OUTLINE

Training Hours: 7:30 AM – 3:30 PM **Daily Format:** 3–4 Learning Modules | Coffee breaks: 09:30 & 11:15 | Lunch Buffet: 01:00 – 02:00

Day 1: Foundations of Failure Analysis and FMECA Process

- Module 1: Introduction to FMEA and FMECA (07:30 – 09:30) • Overview of FMEA vs. FMECA • Applications in design, reliability, and operations • Key terminology: failure mode, effect, severity, detectability
- Module 2: Failure Mode Identification and System Breakdown (09:45 – 11:15) • Breaking down systems into functions and sub-systems • Sources of failure modes: design, wear, human error • Developing clear and consistent failure mode statements
- Module 3: Effects, Causes, and Severity Rating (11:30 – 01:00) • Determining the effect of failure on system performance • Severity ranking criteria and industry scoring tables • Linking to functional safety and criticality
- Module 4: Workshop – Failure Mode Mapping (02:00 – 03:30) • Participants perform a functional breakdown and identify key failure modes

Day 2: Risk Prioritization, Criticality Analysis, and Implementation

- Module 1: Occurrence, Detectability, and RPN Calculation (07:30 – 09:30) • Scoring occurrence and detectability • Calculating Risk Priority Numbers (RPN) • Limitations and alternatives to RPN
- Module 2: Criticality Analysis and Action Prioritization (09:45 – 11:15) • Criticality index vs. RPN • Prioritizing corrective actions • Risk reduction strategies: redesign, inspection, redundancy
- Module 3: Integrating FMECA into Operations and Maintenance (11:30 – 01:00) • Using FMECA in CMMS, PM programs, and spare parts planning • Documenting and updating FMECA findings • Facilitating FMECA workshops with cross-functional teams
- Module 4: Final Workshop – Full FMECA Table Completion (02:00 – 03:30) • Participants complete an FMECA table with scoring, ranking, and action planning • Group discussion and course wrap-up

Certification

Participants will receive a Certificate of Completion in Failure Mode, Effects & Criticality Analysis (FMECA), validating their ability to perform risk assessments and develop preventive strategies for complex systems and equipment.

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