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COURSE BROCHURE

AI for Maintenance and Reliability Engineering Training Course

25 – 29 April 2027
Muscat

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

AI for Maintenance and Reliability Engineering Training Course

Ref: 45_1154 **Date:** 25 – 29 April 2027 **Location:** Muscat **Fees:** 6500 GBP

AI for Maintenance and Reliability Engineering is a 1-week training course for reliability engineers, maintenance planners and plant engineering managers, who leave with a reliability improvement plan. Years of work orders, failure codes and stores transactions sit unused in maintenance systems, so plants that mine them can target bad actors and right-size spares instead of guessing. The course is delivered by Jupiter Prime Training.

Why AI for Maintenance and Reliability Engineering Matters Now

Three forces shape AI for maintenance and reliability engineering today: language models that read free-text technician notes at scale, ageing plant whose failure histories now span decades, and finance teams challenging both maintenance labour budgets and the capital locked in storerooms. A site that applies these methods well finds repeat failures, removes needless preventive tasks and schedules crews against real risk. A site that applies them badly trusts mislabelled failure codes and automates poor strategies. The course rests on reliability centred maintenance RCM, failure mode, effects and criticality analysis FMECA and Weibull life data analysis.

Who Gains Most from AI for Maintenance and Reliability Engineering

- Reliability engineers who run RCM reviews, bad actor lists and root cause investigations
- Maintenance planners who build work packages, schedules and backlog priorities
- Plant engineering managers who approve maintenance strategies and budgets
- Materials and stores coordinators who set stocking levels for critical spares
- CMMS administrators who own failure codes, asset hierarchies and data standards

A plant reliability group gains most when its reliability engineer, planner and stores coordinator attend together.

AI for Maintenance and Reliability Engineering Capabilities

Participants turn neglected maintenance history into evidence for strategy, scheduling and stocking decisions.

- Apply text mining to work order narratives to reveal repeat failure modes — root cause investigation teams
- Calculate Weibull parameters from cleaned failure records to set task intervals — maintenance strategy reviews
- Assess RCM task selections with AI-supported consequence scoring — plant engineering managers
- Design optimised maintenance schedules within crew and permit limits — operations
- Build spares stocking models that balance downtime cost and inventory holding — finance and stores
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Specify failure coding and data standards that keep models trustworthy — CMMS owners

Key AI for Maintenance and Reliability Engineering Terms

- Reliability centred maintenance RCM — a method for choosing maintenance tasks according to the consequences of each functional failure.
- Bad actor — an asset that consumes a disproportionate share of maintenance cost, downtime or labour.
- Weibull analysis — a statistical method that fits failure times to describe whether an asset fails early, randomly or by wear-out.
- Text mining — extracting patterns and categories from free-text records such as technician comments and work order descriptions.
- Mean time between failures MTBF — the average operating time between consecutive failures of a repairable asset.
- Critical spares — parts whose absence would cause long or costly downtime, held in stock despite low usage.

AI for Maintenance and Reliability Engineering Day by Day

Day 1: Reliability Strategy and Maintenance History

- RCM Decision Logic — Consequence-Based Task Selection
- FMECA Criticality Ranking — Risk Priority for Plant Assets
- Bad Actor Pareto — Where Cost and Downtime Concentrate
- CMMS History Audit — Failure Codes, Hierarchies and Gaps
- Maintenance Cost Baseline — Labour, Materials and Lost Production

Day 2: Mining Work Orders for Root Causes

- Natural Language Processing of Technician Notes — Finding Hidden Failure Modes
- Failure Code Reclassification — Correcting Mislabelled History with AI
- Repeat Failure Clustering — Linking Symptoms Across Assets and Sites
- AI-Assisted Root Cause Analysis — Five Whys and Fault Trees
- Corrective Action Tracking — Closing Loops on Recurring Defects

Day 3: Failure Data and Risk Scoring

- Weibull Life Data Analysis — Infant Mortality, Random and Wear-Out Patterns
- MTBF and MTTR Trending — Reliability and Maintainability Signals
- AI-Derived Asset Risk Scores — Combining Criticality, Condition and History
- Preventive Task Effectiveness Review — Removing Tasks That Add Nothing
- Life Cycle Cost Comparison — Repair, Overhaul or Replace Decisions

Day 4: Scheduling and Spares Optimisation

- Schedule Optimisation Models — Crews, Permits and Production Windows
- Backlog Prioritisation Scoring — Ranking Work by Risk and Age
- Shutdown and Turnaround Scope Selection — AI-Supported Work Screening
- Spares Demand Modelling — Intermittent Usage and Lead Times
- Critical Spares Stocking Decisions — Downtime Cost Versus Holding Cost

Day 5: Practising the Reliability Improvement Plan

- Critical Asset Ranking — Applying Risk Scores and Bad Actor Data
- Strategy Change Proposals — Applying RCM and Weibull Findings
- Spares and Schedule Adjustments — Applying Optimisation Outputs
- Data Standards Roadmap — Failure Codes and Work Order Quality
- Reliability Improvement Plan — Ranked Assets, Actions, Owners and Measures

Applying AI for Maintenance and Reliability Engineering After the Course

- Run text mining on two years of work orders and list the top five repeat failure modes.
- Fit Weibull distributions to failure records for three bad actors and adjust their preventive task intervals.

AI for Maintenance and Reliability Engineering Questions FAQ

What is AI for maintenance and reliability engineering and why does it matter now?

AI for maintenance and reliability engineering applies text mining, statistics and optimisation to maintenance history, schedules and spares. It matters now because decades of work orders are finally readable at scale, and refineries and utilities face budget pressure.

Which roles gain most from AI for maintenance and reliability engineering training?

Reliability engineers, maintenance planners, plant engineering managers, stores coordinators and CMMS administrators gain most. You benefit if you choose maintenance tasks, schedule crews or decide which spares to stock.

How does AI for maintenance and reliability engineering differ from a sensor-based predictive maintenance course?

AI for maintenance and reliability engineering works mainly with existing records: work orders, failure codes and stores data. A sensor-based predictive maintenance course centres on live condition signals and equipment failure forecasting models.

What do you bring back from AI for maintenance and reliability engineering training?

You bring back a ranked list of critical assets with AI-derived risk scores, proposed strategy changes, spares adjustments and data standards. Each action has an owner and a measure.

AI for Maintenance and Reliability Engineering: The Way Forward

The reliability improvement plan first informs which bad actors receive strategy reviews next. Reliability engineers, planners and stores coordinators use it to align task changes, schedules and stocking. After the next shutdown or quarter, revisit the risk scores and failure coding quality, since cleaner failure history usually reshuffles the asset ranking and exposes new bad actors.