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COURSE BROCHURE

AI in Smart Maintenance Planning Training Course

17 – 21 October 2027
Muscat

AI in Smart Maintenance Planning Training Course

Ref: 1208_45404 **Date:** 17 – 21 October 2027 **Location:** Muscat **Fees:** 6500 GBP

AI in Smart Maintenance Planning is a 1-week training course for maintenance managers, reliability engineers and asset managers who decide which jobs run, when and with which parts, and it produces a prescriptive maintenance planning blueprint for one asset fleet. Plant owners now face rising uptime targets with fewer skilled technicians, so planning decisions must draw on sensor signals rather than fixed calendars. Jupiter Prime Training designed it for planners moving beyond time-based schedules.

Why AI in Smart Maintenance Planning Matters Now

Three forces are reshaping maintenance planning: connected sensors now stream condition signals from pumps, compressors, conveyors and building plant; experienced planners are retiring faster than replacements arrive; and finance leaders expect every shutdown and spares purchase to be justified. Organisations that plan well convert alerts into the right work orders at the right time and hold less idle inventory. Those that plan badly drown technicians in false alarms or miss failures. The course draws on ISO 55000 thinking on asset value and uses ISO/IEC 42001, the AI management system standard, and the NIST AI Risk Management Framework NIST AI RMF to keep planning models trustworthy.

Who Gains Most from AI in Smart Maintenance Planning

- Maintenance planners and schedulers who build weekly work programmes and shutdown scopes
- Reliability engineers who set failure modes, inspection intervals and condition limits
- Asset managers who balance lifecycle cost, risk and availability across a fleet
- Stores and spares controllers who decide stocking levels for critical parts
- Operations leads who release equipment for intervention and accept production loss

A site maintenance department gains most when its planner, reliability engineer and stores controller attend together and agree how model outputs become scheduled jobs.

AI in Smart Maintenance Planning Capabilities

Participants turn condition signals and failure forecasts into scheduled, resourced and justified maintenance jobs.

- Assess sensor and CMMS history for completeness and labelling quality — model readiness decisions
- Build anomaly detection and remaining-useful-life estimates for critical assets — reliability engineers
- Design rules that convert model alerts into prioritised work orders — planners and schedulers
- Calculate spares stocking levels from failure forecasts — stores and finance controllers
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Weigh run-to-failure, time-based and predictive strategies by asset criticality — asset managers
- Communicate a business case with avoided downtime and inventory effects — plant leadership

Key AI in Smart Maintenance Planning Terms

- Remaining useful life RUL — an estimate of how long an asset can keep operating before it reaches a failure threshold.
- Anomaly detection — a method that flags sensor readings departing from an asset's normal operating pattern.
- Prescriptive maintenance — an approach in which models recommend the specific action, timing and resources for an intervention.
- CMMS — a computerised maintenance management system that holds asset registers, work orders, labour and parts history.
- P-F interval — the time between a detectable potential failure and the point of functional failure.
- Asset criticality ranking — a scoring of assets by the safety, production and cost consequences of their failure.

AI in Smart Maintenance Planning Day by Day

Day 1: From Calendars to Condition Signals

- Maintenance Strategy Spectrum — Choosing Reactive, Preventive or Predictive by Asset
- Asset Criticality Ranking — Focusing Models Where Failures Hurt Most
- P-F Interval Analysis — Setting Realistic Detection Windows
- Sensor Coverage Audit — Vibration, Temperature, Pressure and Current Signals
- CMMS Work History Mining — Recovering Failure Codes and Repair Times

Day 2: Building Failure Forecasts

- Data Readiness Scorecard — Gaps, Labels and Time Alignment
- Anomaly Detection Baselines — Separating Real Faults from Noise
- Remaining Useful Life Models — Degradation Curves and Survival Methods
- Alert Threshold Tuning — Limiting Nuisance Alarms for Technicians
- Model Validation on Held-Out Failures — Accepting Forecasts for Planning

Day 3: Prescriptive Scheduling and Spares

- Alert-to-Work-Order Rules — Priority, Craft and Lead Time
- Schedule Optimisation Solvers — Sequencing Jobs Against Production Windows
- Opportunistic Maintenance Bundling — Combining Jobs During Planned Stops
- Failure-Driven Spares Forecasting — Setting Stock Levels for Critical Parts
- Technician Copilots and Digital Job Packs — Guiding Field Execution

Day 4: Integration, Trust and the Business Case

- CMMS and Historian Integration Patterns — Closing the Data Loop
- ISO/IEC 42001 and NIST AI RMF Controls — Assigning Model Ownership
- Model Drift After Overhauls — Retraining Triggers and Recalibration
- Downtime and Inventory Benefit Model — Building the Investment Case
- Planner Change Readiness — Roles, Skills and Acceptance of Recommendations

Day 5: Practising the Prescriptive Maintenance Planning Blueprint

- Criticality and Strategy Selection for a Chosen Fleet — Scope Confirmation
- Readiness Scorecard and Forecast Choice — Selecting Models per Asset Class
- Work Order Rules and Spares Settings — Agreeing Planning Logic
- Benefit Model Stress Test — Testing Assumptions with Finance
- Prescriptive Maintenance Planning Blueprint Completion — Presenting to Plant Leadership

Applying AI in Smart Maintenance Planning After the Course

- Run the data readiness scorecard on the CMMS history and sensor feeds of the ten most critical assets on site.
- Pilot alert-to-work-order rules on one asset class and track nuisance alarms and planner acceptance for a month.

AI in Smart Maintenance Planning Questions FAQ

What is AI in Smart Maintenance Planning and why does it matter now?

It is the use of anomaly detection, remaining-useful-life models and scheduling solvers to decide which maintenance jobs run and when. It matters now because sensor data is plentiful while skilled planners and downtime budgets are scarce.

Which roles gain most from AI in Smart Maintenance Planning?

Planners, schedulers, reliability engineers, asset managers and stores controllers gain most. You benefit most if you turn equipment condition information into work orders, shutdown scopes or spares decisions.

How does AI in Smart Maintenance Planning differ from a vibration analysis or condition monitoring course?

It focuses on planning decisions rather than signal diagnostics. You learn how forecasts become prioritised work orders, schedules, spares levels and an investment case, instead of how to interpret individual spectra.

What do you bring back from AI in Smart Maintenance Planning?

You bring back a planning blueprint for one asset fleet, covering criticality, model choices, work order rules, spares settings and a benefit case that your department can test straight away.

AI in Smart Maintenance Planning: The Way Forward

The prescriptive maintenance planning blueprint links condition signals to the jobs, schedules and spares a site actually runs. Its first use is choosing which asset class receives model-driven work orders, agreed by the maintenance manager with reliability and stores leads. After the first overhaul cycle, revisit its alert thresholds and benefit assumptions against recorded failures.