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COURSE BROCHURE

# AI in Asset Lifecycle Management Training Course

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Registered in the United Kingdom and Saudi Arabia

# AI in Asset Lifecycle Management Training Course

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AI in Asset Lifecycle Management is a 1-week training course for asset managers, maintenance and reliability engineers and asset owners, who leave with an AI-enabled asset lifecycle plan for one critical asset class. Sensor data, failure histories and machine learning now forecast degradation early enough to change maintenance, renewal and capital choices. Jupiter Prime Training runs this course on AI in asset lifecycle management for those accountable for asset performance, risk and cost.

## Why AI in Asset Lifecycle Management Matters Now

Three forces shape AI in asset lifecycle management today: ageing asset bases that outlast their design life, condition monitoring sensors that stream data from pumps, transformers and rotating equipment, and owners who expect renewal budgets justified by evidence of risk. Organisations that use these signals well extend useful life, avoid unplanned outages and spend capital on the assets most likely to fail; those that keep calendar-based routines over-maintain healthy equipment and miss failing units. Examples come from water utility pumping stations and power distribution networks. Model risk is handled with ISO/IEC 42001 for AI management systems and the NIST AI Risk Management Framework AI RMF.

## Who Gains Most from AI in Asset Lifecycle Management

- Asset managers responsible for lifecycle cost, risk and asset registers
- Reliability engineers who analyse failure modes and set maintenance strategies
- Maintenance planners who schedule work orders, spares and shutdowns
- Asset owners and capital planners who approve renewal and replacement budgets
- Condition monitoring specialists who run vibration, thermal and oil analysis

The strongest gain comes when an asset manager, a reliability engineer and a capital planner responsible for the same asset class attend together.

## AI in Asset Lifecycle Management Capabilities

Participants learn to turn condition signals and failure records into lifecycle decisions that balance risk, performance and cost.

- Assess asset criticality and data readiness for predictive maintenance — reliability leads
- Apply anomaly detection and remaining useful life models to condition monitoring data — maintenance planners
- Specify a digital twin scope that links asset state to operating scenarios — engineering managers
- Weigh repair, refurbish and replace options with risk-based investment models — capital committees
- Calculate lifecycle cost and risk reduction for each intervention — finance partners
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Build an AI-enabled asset lifecycle plan with triggers, owners and measures — asset owners

## Key AI in Asset Lifecycle Management Terms

- Predictive Maintenance — scheduling work from forecasts of when a component is likely to fail, rather than fixed intervals.
- Condition Monitoring — measuring signals such as vibration, temperature or oil quality to judge equipment health.
- Remaining Useful Life — the estimated operating time before an asset reaches an unacceptable condition.
- Digital Twin — a data-driven model of a physical asset kept in step with its real condition and operation.
- Asset Criticality — a ranking of assets by the consequence and likelihood of their failure.
- Lifecycle Cost — the total cost of owning an asset from acquisition through operation, maintenance and disposal.

## AI in Asset Lifecycle Management Day by Day

## Day 1: Asset Lifecycle Decisions and Data

- Asset Lifecycle Stages — Acquire, Operate, Maintain, Renew and Dispose
- Criticality and Risk Ranking Methods — Where Analytics Matters Most
- Asset Register and Work Order Data Quality — Model Readiness Checks
- Failure Mode and Effects Analysis Refresher — Linking Faults to Signals
- AI Use Case Map Across the Lifecycle — Prioritising Opportunities

## Day 2: Condition Monitoring Analytics

- Vibration, Thermal and Oil Signal Basics — Detectable Degradation Patterns
- Sensor Placement and Sampling Choices — Coverage Versus Cost
- Anomaly Detection on Equipment Signals — Early Warning Thresholds
- Alarm Rationalisation for Maintenance Teams — Reducing Nuisance Alerts
- Edge and Cloud Processing Options — Latency and Connectivity Trade-Offs

## Day 3: Predictive Maintenance and Remaining Useful Life

- Remaining Useful Life Models — Survival, Degradation and Machine Learning Approaches
- Failure Prediction From Work Order Histories — Text and Event Mining
- Maintenance Strategy Selection — Run-to-Failure, Preventive or Predictive
- Spares and Shutdown Planning With Forecasts — Inventory and Outage Decisions
- Model Validation and Drift Monitoring — Trusting Failure Forecasts

## Day 4: Digital Twins and Investment Decisions

- Digital Twin Scope and Fidelity Levels — Matching Detail to Decisions
- Scenario Simulation With Asset Twins — Load, Ageing and Operating Changes
- Risk-Based Renewal Models — Repair, Refurbish or Replace Choices
- Capital Plan Optimisation Across Asset Portfolios — Budget Constraints
- ISO/IEC 42001 and NIST AI RMF Controls — Asset Model Risk

## Day 5: Practising the AI-Enabled Asset Lifecycle Plan

- Criticality and Data Profile for a Chosen Asset Class — Applying Readiness Checks
- Monitoring and Prediction Design — Applying Condition Analytics
- Intervention Options With Lifecycle Cost — Applying Renewal Models
- Performance and Risk Measures — Availability, Failures and Spend
- AI-Enabled Asset Lifecycle Plan — Presentation to Asset Owners

## Applying AI in Asset Lifecycle Management After the Course

- Rank one asset class by criticality and check its work order and sensor data against model readiness criteria
- Set anomaly thresholds for the three most critical machines and compare alerts with planned maintenance findings

## AI in Asset Lifecycle Management Questions FAQ

### What is AI in asset lifecycle management and why does it matter now?

AI in asset lifecycle management uses condition data, failure prediction and digital twins to guide maintenance, renewal and investment decisions. It matters now because ageing assets and tighter budgets demand evidence about which equipment truly needs attention.

### Which roles gain most from AI in asset lifecycle management training?

Asset managers, reliability engineers, maintenance planners, capital planners and condition monitoring specialists gain most. They decide maintenance strategies, shutdowns and renewal spending and need trustworthy forecasts of asset health.

### How does AI in asset lifecycle management training differ from a general maintenance management course?

It adds predictive models, condition analytics and digital twins to classic maintenance planning. You judge remaining useful life forecasts and risk-based renewal options rather than only scheduling preventive work by calendar or runtime.

### What do you bring back from AI in asset lifecycle management training?

You bring back an AI-enabled asset lifecycle plan for one critical asset class. It sets criticality, monitoring and prediction methods, intervention options with lifecycle cost, and the measures asset owners will review.

## AI in Asset Lifecycle Management: The Way Forward

The AI-enabled asset lifecycle plan first informs which assets in the chosen class move from calendar routines to condition-based or predictive maintenance. Asset managers, reliability engineers and capital planners use it to schedule work and defend renewal budgets. After the first failure forecasts are tested against real outcomes, revisit model thresholds, since early predictions often need recalibration to local operating conditions.