JUPITER PRIME

Consulting • Training • Advisory

جوبيتر برايم للاستشارات والتدريب

COURSE BROCHURE

Risk-Based Inspection and Maintenance Prioritisation Training Course

26 – 30 April 2027
Barcelona

jupiterprime.uk

info@jupiterprime.uk

Registered in the United Kingdom and Saudi Arabia

Risk-Based Inspection and Maintenance Prioritisation Training Course

Ref: 1149_43265 **Date:** 26 – 30 April 2027 **Location:** Barcelona **Fees:** 6200 GBP

Risk-Based Inspection and Maintenance Prioritisation is a 1-week training course for inspection engineers and integrity and maintenance managers who build a risk-ranked equipment priority list for one process unit. Fixed-interval inspection spends effort on low-risk vessels while degrading piping goes unexamined. Jupiter Prime Training delivers this course on risk-based inspection and maintenance prioritisation to integrity specialists from many industries.

Why Risk-Based Inspection and Maintenance Prioritisation Matters Now

Ageing plants, leaner inspection crews and pressure to extend run lengths between turnarounds all push operators away from calendar intervals. Insurers, corporate risk committees and plant owners now expect a defensible reason for every deferred or accelerated inspection. Operators who rank equipment by probability and consequence of failure direct scarce inspectors to the items most likely to leak or rupture; those who do not either over-inspect sound equipment or miss active corrosion. The course draws on the asset management principles of ISO 55001 and the maintenance terminology of EN 13306, and treats industry risk-based inspection methods in general terms.

Who Gains Most from Risk-Based Inspection and Maintenance Prioritisation

- Engineers who set inspection intervals and techniques for vessels, piping and tanks
- Integrity leads who own damage mechanism reviews and corrosion loops
- Maintenance managers who rank work orders and defend deferrals
- Reliability specialists who estimate failure likelihood from history and condition data
- Process safety staff who judge the consequence of a loss of containment

An integrity group from one refinery, gas plant or chemical site gains most when its inspection and maintenance members attend together.

Risk-Based Inspection and Maintenance Prioritisation Capabilities

Participants practise turning damage mechanism knowledge and failure consequence into ranked inspection and maintenance decisions.

- Assess active damage mechanisms for each corrosion loop — inspection technique selection
- Calculate probability of failure from thinning rates and inspection effectiveness — interval setting
- Weigh safety, environmental and production consequence of failure — risk committee decisions
- Build a risk matrix with agreed category boundaries — site risk acceptance criteria
- Design an inspection plan that lowers risk below target — turnaround scope owners
- Apply risk ranking to maintenance work order priorities — planners and operations

Key Risk-Based Inspection and Maintenance Prioritisation Terms

- Probability of Failure PoF — the likelihood that equipment loses containment within a set period, given its damage rate and inspection history.
- Consequence of Failure CoF — the safety, environmental and business impact if a given item loses containment.
- Damage Mechanism — a physical or chemical process, such as thinning, cracking or creep, that degrades equipment over time.
- Corrosion Loop — a group of equipment and piping sharing the same process fluid, materials and degradation conditions.
- Inspection Effectiveness — a grading of how well a chosen technique and coverage detects a specific damage mechanism.
- Risk Target — the maximum acceptable risk level that triggers an inspection or mitigation before it is exceeded.

Risk-Based Inspection and Maintenance Prioritisation Day by Day

Day 1: From Calendar Intervals to Risk Ranking

- Time-Based Versus Risk-Based Inspection Philosophy — Case for Change
- Equipment Hierarchy and Inventory Boundaries — Scope of the Assessment
- Qualitative, Semi-Quantitative and Quantitative Approaches — Method Choice
- Data Gathering From Drawings and Inspection Records — Quality Gaps
- Risk Acceptance Criteria Elicitation — Owner Risk Appetite

Day 2: Damage Mechanisms and Corrosion Loops

- Thinning, Pitting and Erosion Screening — Wall Loss Rate Estimation
- Stress Corrosion and Hydrogen Cracking Susceptibility — Material Review
- High-Temperature Creep and Fatigue Indicators — Remaining Life Judgement
- Corrosion Loop Definition on Process Flow Diagrams — Grouping Logic
- Integrity Operating Windows — Process Excursions That Change Damage Rates

Day 3: Probability and Consequence Modelling

- Generic Failure Frequencies and Adjustment Factors — Likelihood Baseline
- Inspection Effectiveness Grading — Credit for Past Surveys
- Release Scenarios, Hole Sizes and Inventory — Consequence Area
- Toxic, Flammable and Environmental Impact Ranking — Severity Scoring
- Business Interruption and Repair Cost Estimates — Financial Consequence

Day 4: Risk Matrices, Inspection Plans and Maintenance Priorities

- Five-by-Five Risk Matrix Calibration — Category Boundaries and Owners
- Inspection Technique and Coverage Selection — Risk Reduction per Survey
- Risk-Based Interval Setting Against Targets — Next Due Dates
- Risk-Based Maintenance Ranking of Rotating Equipment — Work Order Priority
- Mitigation Options Beyond Inspection — Material Upgrade and Process Change

Day 5: Practising the Risk-Ranked Equipment Priority List

- Case Study from a Gas Processing Plant — Sour Service Piping Ranking
- Case Study from a Chemical Storage Terminal — Tank Floor Inspection Deferral
- Reassessment Triggers After Upsets and Findings — Living Risk Profile
- Audit Trail and Sign-Off for Deferred Inspections — Accountability Records
- Risk-Ranked Equipment Priority List Assembly — Peer Challenge and Handover

Applying Risk-Based Inspection and Maintenance Prioritisation After the Course

- Define the corrosion loops of one process unit and screen each loop for active damage mechanisms.
- Rank the open inspection and maintenance backlog of that unit on the calibrated risk matrix.

Risk-Based Inspection and Maintenance Prioritisation Questions FAQ

What is risk-based inspection and maintenance prioritisation, and why does it matter now?

It is the practice of setting inspection intervals and maintenance priorities from the probability and consequence of failure. It matters now because ageing plants and smaller crews cannot inspect everything on a fixed calendar.

Which roles gain most from risk-based inspection and maintenance prioritisation?

Inspection engineers, integrity leads and maintenance managers gain most. You also benefit if you work in process safety or reliability and feed consequence or likelihood estimates into the ranking.

How does a risk-based inspection and maintenance prioritisation course differ from an inspection techniques course?

It decides where and when to inspect rather than how to operate a test method. Non-destructive testing courses teach techniques; here you rank equipment, set intervals and defend deferrals.

What do you bring back from risk-based inspection and maintenance prioritisation?

You bring back a ranked list of equipment for one unit. It shows each item's damage mechanisms, risk category, next inspection and maintenance priority.

Risk-Based Inspection and Maintenance Prioritisation: The Way Forward

The risk-ranked equipment priority list first informs which inspections enter the next turnaround scope and which can safely move. Inspection engineers use it to plan surveys, maintenance managers to order the backlog and plant owners to approve deferrals. After its first use, revisit the consequence assumptions, because inventory, occupancy and process conditions change.