Decision Analysis for Operation & Maintenance Professionals

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London (UK)



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Why This Course

Operation and maintenance environments are filled with uncertainty. Equipment failures, budget constraints, production targets, and safety considerations all compete for attention. In such conditions, decisions made on intuition alone can lead to costly downtime or inefficient resource allocation. Structured decision analysis provides a disciplined way to evaluate options, quantify risk, and justify actions with confidence.

This intensive one-week program equips O&M professionals with practical decision analysis tools tailored to real operational challenges. Participants will learn how to structure complex problems, build and interpret decision trees, integrate risk assessment into maintenance planning, and apply probabilistic thinking to improve reliability and performance. The course emphasizes practical application to ensure immediate workplace impact.

What You'll Learn and Practice

By attending this program, you will be able to:

- Apply structured decision analysis frameworks to complex O&M situations.
- Construct and evaluate decision trees for maintenance and operational choices.
- Integrate quantitative risk assessment into planning and execution.
- Use probabilistic modeling to support equipment reliability decisions.
- Apply value of information concepts to optimize maintenance strategies.

The Program Flow

Day 1: Foundations of Decision Analysis in O&M

- Core principles of decision analysis
- Structuring operational and maintenance decisions
- Problem framing in maintenance contexts
- Applying a decision quality framework to operations



Day 2: Decision Trees and Probabilistic Modeling

- Building decision trees for maintenance alternatives
- Assessing probabilities under operational uncertainty
- Calculating expected values for equipment-related decisions
- Conducting sensitivity analysis in O&M scenarios

Day 3: Risk Assessment and Management in O&M

- Identifying operational and maintenance risks
- Quantitative risk analysis techniques
- Developing effective risk mitigation strategies
- Embedding risk considerations into daily decision processes

Day 4: Value of Information in Maintenance Decisions

- Understanding perfect and imperfect information
- Calculating the value of additional maintenance data
- Applying value of information to condition monitoring
- Designing effective information-gathering strategies

Day 5: Advanced Topics and Practical Applications

- Multi-criteria decision analysis for complex O&M environments
- Facilitating group decision-making within operational teams
- Recognizing and managing cognitive biases in maintenance decisions
- Case studies and applied real-world exercises

Individual Impact

Participants will leave the program with:

- Stronger confidence in making structured, data-driven maintenance decisions.
- Enhanced capability to manage operational risks proactively.
- Improved efficiency in allocating maintenance resources.
- Greater ability to justify O&M strategies and investments to management.

Organizational Impact

Organizations will benefit from:

- More consistent and transparent decision-making processes.
- Reduced operational risk and unplanned downtime.
- Better prioritization of maintenance activities and investments.
- Improved alignment between operational objectives and resource utilization.



Training Methodology

- Instructor-led sessions combining analytical frameworks with practical examples
- Hands-on exercises in decision tree construction and risk modeling
- Scenario-based workshops reflecting real O&M challenges
- Group discussions to strengthen collaborative decision-making skills

Beyond the Course

By the end of the one week, participants will be equipped to:

- Apply structured decision analysis methods in daily O&M activities.
- Integrate risk and uncertainty into maintenance planning with clarity.
- Optimize information use to support reliability and performance goals.
- Contribute to smarter, more defensible operational decision-making across the organization.

