

# aractech

Global Learning for Operational Leaders



OIL AND GAS | OG-010

## Uncertainty Modeling & Risk-Based Decision Making in Energy Projects

### Contact

+31 85 7444446  
info@aractech.com  
<https://aractech.com>

### Address

Waarderweg 50, 2031PB Haarlem - Netherlands.

# Course content

## Why Attend

Energy projects operate under conditions where volatility, technical complexity, and long investment cycles make uncertainty a critical factor in success. Managing this uncertainty effectively requires more than traditional risk registers—it demands structured modeling and disciplined decision frameworks.

This course provides practical techniques to model uncertainty, quantify risk exposure, and support high-impact decisions across the project lifecycle. Participants will learn how to transform uncertain variables into actionable insights, improving confidence in investment, planning, and operational decisions.

## Course Methodology

- Industry-based case studies from oil, gas, and energy projects
- Guided exercises in uncertainty modeling and risk evaluation
- Group discussions and decision-making simulations
- Step-by-step demonstrations of analytical techniques
- Practical frameworks that can be immediately applied in the workplace

## Course Objectives

- Model uncertainty using structured quantitative approaches
- Apply risk-based decision-making techniques in complex projects
- Evaluate project scenarios using probabilistic analysis
- Assess the impact of uncertainty on cost, schedule, and performance
- Improve decision quality through data-driven insights
- Integrate uncertainty modeling into project governance and reporting

## Target Audience

- This course is suitable for:
- Project Managers and Engineers in energy and oil & gas
- Risk and Planning Specialists

# Course outline

## Detailed course outline

Day-by-day outline for Uncertainty Modeling & Risk-Based Decision Making in Energy Projects.

### Day 1 - Foundations of Uncertainty in Energy Projects

- Understanding uncertainty vs. risk in energy environments
- Sources of uncertainty (market, technical, geopolitical, operational)
- Risk management frameworks in energy projects
- Techniques for identifying and structuring uncertainty
- Building a robust risk and uncertainty register
- Qualitative assessment and prioritization

### Day 2 - Quantitative Uncertainty Modeling

- Introduction to probabilistic modeling concepts
- Key statistical tools for uncertainty analysis
- Defining input distributions and assumptions
- Sensitivity analysis and key risk drivers
- Introduction to simulation techniques (e.g., Monte Carlo concepts)
- Interpreting and validating model outputs

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### Day 3 - Risk-Based Decision Analysis

- Principles of decision-making under uncertainty
- Decision trees and expected value concepts
- Evaluating alternatives using risk-adjusted metrics
- Risk appetite and decision criteria
- Scenario comparison and trade-off analysis
- Case study: Energy investment decision

### Day 4 - Integrated Risk Modeling for Projects

- Linking cost, schedule, and performance risks
- Modeling dependencies and correlations
- Scenario planning and stress testing
- Risk mitigation strategies and optimization
- Introduction to risk modeling tools (conceptual overview)
- Practical workshop: building an integrated model

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### Day 5 - Embedding Risk-Based Decision Making

- Applying risk insights across the project lifecycle
- Governance and risk reporting frameworks
- Communicating uncertainty to senior stakeholders
- Supporting strategic and operational decisions
- Lessons learned and industry best practices
- Final group exercise and action planning

# Seminar dates

## Available seminar dates

Live dates and pricing for Uncertainty Modeling & Risk-Based Decision Making in Energy Projects generated from the course details page.

Date	Location	Format	Fee
15 - 19 June 2026	Munich	Classroom	€2,415
20 - 24 July 2026	Barcelona	Classroom	€2,695
3 - 7 August 2026	Amsterdam	Classroom	€2,975
7 - 11 September 2026	Rome	Classroom	€2,975
12 - 16 October 2026	Kuala Lumpur	Classroom	€1,575
9 - 13 November 2026	Barcelona	Classroom	€2,695
14 - 18 December 2026	London	Classroom	€2,940

### Live online option

Online delivery is available at €1,250.