

PROJECT ANALYSIS: TOOLS & TECHNIQUES FOR MANAGING RISK & UNCERTAINTY



GENTEX[®]
TRAINING CENTER



Introduction

Projects rarely proceed exactly as planned, and the gap between plan and reality is where value is lost. The Project Analysis: Tools & Techniques for Managing Risk & Uncertainty Course equips project professionals to close that gap. Participants learn how to analyse project viability, quantify risk exposure, build contingency into estimates, and choose between options under uncertainty. Furthermore, the course covers decision trees, Monte Carlo simulation, and sensitivity analysis alongside standard risk registers. In addition, it addresses governance, escalation, and contract risk. As a result, delegates leave able to support project decisions with quantitative evidence rather than optimism.

Project Analysis: Tools & Techniques for Managing Risk & Uncertainty Course Objectives

- Apply project analysis methods across feasibility, planning, and execution phases.
- Build and maintain a risk register with structured risk identification techniques.
- Perform qualitative risk assessment using probability-impact matrices.
- Apply quantitative risk analysis with Monte Carlo simulation and decision trees.
- Use sensitivity analysis and tornado diagrams to identify critical drivers.
- Apply expected monetary value (EMV) and decision tree analysis to option selection.
- Estimate project costs and durations using three-point and PERT techniques.
- Build contingency and management reserves with justified confidence levels.
- Apply earned value management (EVM) to track performance and forecast outcomes.
- Manage contract, supplier, and execution risk through structured mitigation plans.

Course Methodology

- Interactive workshops led by project risk and analysis practitioners.

LEARN BOLD. LEAD BEYOND

GENTEX Training Center LLC | Orlando - FL, USA
Info@gentextraining.com



- Hands-on exercises using risk registers, matrices, and decision trees.
- Monte Carlo simulation practice on project cost and schedule models.
- Case studies of projects that succeeded or failed on risk management.
- Group work on contingency estimation and reserve setting.
- Simulation of a risk review and escalation meeting.
- Capstone project: presenting a full project risk analysis.

Who Should Take This Course

- Project managers and project analysts.
- Risk managers and PMO professionals.
- Cost engineers and planners.
- Programme and portfolio managers.
- Contract and procurement project staff.
- Consultants supporting project assurance.

Project Analysis: Tools & Techniques for Managing Risk & Uncertainty Course Outlines

Day 1: Project Analysis and Decision Context

- Purpose of project analysis across the lifecycle.
- Feasibility analysis and option appraisal basics.
- Stakeholder expectations and success criteria.
- The project risk management process: identify, assess, plan, implement, review.
- Risk appetite, tolerance, and thresholds.
- Governance structures for project decisions.





- Exercise: defining risk categories for a live project.

Day 2: Risk Identification and Qualitative Assessment

- Risk identification techniques: brainstorming, checklists, and interviews.
- SWOT and assumption analysis for risk discovery.
- Risk breakdown structure (RBS) construction.
- Probability-impact matrices and risk scoring.
- Risk prioritisation and ranking methods.
- Risk ownership and response planning.
- Workshop: building a project risk register.

Day 3: Quantitative Risk Analysis

- Quantitative versus qualitative analysis.
- Monte Carlo simulation for cost and schedule.
- Setting distributions and correlations correctly.
- Interpreting simulation outputs and confidence levels.
- Sensitivity analysis and tornado diagrams.
- Expected monetary value (EMV) calculations.
- Exercise: running a Monte Carlo simulation.

Day 4: Estimation, Contingency, and Decision Tools

- Cost and duration estimating methods.
- Three-point estimating and PERT analysis.
- Building contingency reserves with justified confidence.
- Decision trees for option selection under uncertainty.

LEARN BOLD. LEAD BEYOND

GENTEX Training Center LLC | Orlando - FL, USA
Info@gentextraining.com



- Real options thinking and staged decision gates.
- Risk-adjusted cost-benefit analysis.
- Case exercise: choosing between project options.

Day 5: Control, Escalation, and Contract Risk

- Earned value management (EVM) for performance tracking.
- Forecasting with estimate at completion (EAC) and to-complete indices.
- Risk monitoring, triggers, and early warning indicators.
- Escalation routes and governance reporting.
- Contract risk allocation and supplier performance risk.
- Lessons learned and knowledge retention.
- Capstone project: presenting a project risk analysis.

Conclusion

By successfully completing Project Analysis: Tools & Techniques for Managing Risk & Uncertainty, participants will have acquired practical knowledge of risk identification, qualitative and quantitative analysis, contingency setting, decision trees, and earned value control. They will understand how to quantify uncertainty instead of guessing at it and how to justify reserves with evidence. In addition, they will gain a full risk analysis toolkit. Gentex Training Center builds this programme around applied analysis, so delegates return ready to protect project outcomes.

FAQs





Q1 What is the "Project Analysis: Tools & Techniques for Managing Risk & Uncertainty" course about?

It teaches how to analyse and manage project risk with quantitative tools. Participants learn risk identification, probability-impact assessment, Monte Carlo simulation, decision trees, contingency setting, and earned value control. The course focuses on defending project decisions with evidence.

Q2 What are the key benefits of the "Project Analysis: Tools & Techniques for Managing Risk & Uncertainty" course?

It reduces unplanned cost and schedule overruns by replacing optimism with quantified analysis. Participants gain simulation, decision tree, and estimating skills plus stronger reserve justification. Organisations benefit from more realistic budgets, earlier risk escalation, and better project governance.

Q3 What skills will I gain from the "Project Analysis: Tools & Techniques for Managing Risk & Uncertainty" course?

Participants gain project risk identification and assessment, quantitative risk analysis and simulation, contingency and reserve estimation, and decision analysis and earned value control.



Q4 What tools, methods, or standards are covered in the "Project Analysis: Tools & Techniques for Managing Risk & Uncertainty" course?

The course covers risk registers and risk breakdown structures (RBS), probability-impact matrices, Monte Carlo simulation, sensitivity analysis and tornado diagrams, expected monetary value (EMV), decision trees, three-point estimating and PERT analysis, contingency and management reserves, earned value management (EVM) with EAC forecasting, real options thinking, and risk-adjusted cost-benefit analysis.

Q5 How is the "Project Analysis: Tools & Techniques for Managing Risk & Uncertainty" course applied in real-world practice?

Participants apply it by building risk registers with clear owners, running simulations to set contingency reserves, and using decision trees to compare options. They also track performance with EVM, monitor risk triggers, and escalate exposures through governance channels with quantified evidence.