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COURSE BROCHURE

Petroleum Decision Analysis and Value of Information Course

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London

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Registered in the United Kingdom and Saudi Arabia

Petroleum Decision Analysis and Value of Information Course

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Petroleum Decision Analysis and Value of Information is a 2-week training course for petroleum economists, reservoir engineers and asset planners who frame exploration and development choices, built around one work product: a decision recommendation pack for a real asset. Volatile prices, costly data and limited capital mean every well, survey and phase must earn its place. Jupiter Prime Training offers this course to specialists who advise decision boards.

Why Petroleum Decision Analysis and Value of Information Matters Now

Three pressures raise the stakes. Seismic surveys, appraisal wells and extended tests cost more, so each data purchase must show it can change a choice. Investors and partners expect probabilistic ranges rather than single forecasts, and look-backs keep showing that past estimates were too narrow and too optimistic. Boards also face more options than budget, from infill drilling to tie-backs and new plays. An organisation that frames choices well spends less on data that changes nothing and avoids projects whose downside was hidden. The course rests on the Petroleum Resources Management System PRMS for volume classes and on established decision tree and Bayesian methods.

Who Gains Most from Petroleum Decision Analysis and Value of Information

- Economists who build probabilistic project models and present ranges to boards
- Reservoir and geoscience specialists who estimate volumes and chance of success
- Asset planners who sequence appraisal, development phases and data acquisition
- Portfolio analysts who rank exploration and development opportunities under a capital limit
- Advisers who prepare investment recommendations and challenge biased estimates

An asset or exploration unit gains most when its economist, reservoir engineer and planner attend together and agree one way to frame and test their next choice.

Petroleum Decision Analysis and Value of Information Capabilities

Participants move from producing single forecasts to showing decision makers which choice holds up across the range of outcomes and which data is worth buying.

- Design a strategy table and influence diagram for an exploration or development choice — decision boards
- Calculate expected monetary value through a decision tree with risk attitude tested — drill or farm-out choices
- Weigh the value of seismic, appraisal wells and tests before committing spend — data acquisition budgets
- Build a correlated Monte Carlo model with option-based decision rules — phased development plans
- Apply efficient frontier and capital constraint methods — portfolio ranking committees
- Test estimates for anchoring and overconfidence using calibration and pre-mortems — specialist peer reviews

Key Petroleum Decision Analysis and Value of Information Terms

- Expected monetary value — the probability-weighted average payoff of a choice, used to rank alternatives under uncertainty.
- Value of information — the increase in expected value from making a choice after receiving new data, compared with choosing without it.
- Decision tree — a diagram of sequential choices and chance events with their probabilities and payoffs, solved by rolling back.
- Chance of success — the probability that a prospect contains a working petroleum system, combining source, reservoir, trap and seal.
- Bayesian revision — updating prior probabilities with the reliability of new evidence to obtain posterior probabilities.
- Efficient frontier — the set of portfolios giving the highest expected return for each level of outcome spread.

Petroleum Decision Analysis and Value of Information Day by Day

Day 1: Decision Quality in Exploration and Development

- Decision Quality Chain — Separating Good Decisions From Lucky Outcomes
- Decision Hierarchy — Policies Taken as Given, Choices in Focus, Deferred Tactics
- Opportunity Framing Session — Agreeing the Real Question Before Modelling
- Stakeholder Value Measures — Choosing What the Decision Maker Optimises
- Look-Back Evidence — What Past Wells Reveal About Forecast Calibration

Day 2: Structuring Choices and Uncertainties

- Strategy Table — Building Coherent Alternatives From Many Option Combinations
- Influence Diagram — Mapping Which Uncertainties Drive Which Outcomes
- Uncertainty Elicitation Interviews — Turning Specialist Judgement Into Ranges
- P10, P50 and P90 Conventions — Communicating Ranges Without Ambiguity
- Tornado Screening — Deciding Which Uncertainties Deserve Probabilistic Treatment

Day 3: Probabilistic Volumes and Chance of Success

- Geological Chance Factors — Source, Reservoir, Trap and Seal Estimates
- Risked Versus Unrisked Volumes — Presenting Prospects Consistently
- Petroleum Resources Management System PRMS Classes — Aligning Volume Categories
- Lognormal Volume Distributions — Fitting Area, Thickness and Recovery Inputs
- Prospect Dependency — Updating Neighbouring Chances After a Discovery

Day 4: Decision Trees and Expected Monetary Value

- Decision Tree Construction — Sequencing Choices, Chance Nodes and Payoffs
- Expected Monetary Value Rollback — Ranking Drill, Farm-Out or Relinquish
- Risk Attitude and Utility Curves — When Expected Value Alone Misleads
- Certainty Equivalent Comparison — Testing Tolerance for Dry-Hole Exposure
- Tree Sensitivity Sweeps — Finding Breakeven Probabilities for Each Branch

Day 5: Value of Information

- Perfect Information Ceiling — Bounding What Any Data Purchase Is Worth
- Imperfect Information and Bayesian Revision — Prior, Likelihood and Posterior Beliefs
- Seismic Reprocessing Versus New Acquisition — Comparing Data Reliability
- Appraisal Well Value — Deciding Whether Another Well Changes the Plan
- Pilot and Extended Well Test Value — Reducing Recovery Factor Uncertainty

Day 6: Monte Carlo Simulation for Projects

- Monte Carlo Model Architecture — Linking Volumes, Profiles and Costs
- Correlation Between Inputs — Avoiding Falsely Narrow Outcome Ranges
- Convergence and Sampling Checks — Knowing When Iterations Are Enough
- Probabilistic Net Present Value Curves — Reading Downside and Upside Tails
- Scenario Versus Stochastic Approaches — Choosing the Right Representation

Day 7: Flexibility and Real Options

- Staged Development Options — Valuing Phase Two Only If Phase One Performs
- Option to Defer — Weighing Waiting Against Lost Production Time
- Option to Abandon or Redeploy — Limiting Exposure on Weak Fields
- Expansion and Tie-Back Options — Valuing Spare Capacity in Facilities
- Decision Rules Within Simulation — Modelling How Managers Will Actually React

Day 8: Portfolio Decisions Under Uncertainty

- Portfolio Efficient Frontier — Balancing Expected Return Against Outcome Spread
- Exploration Portfolio Success Odds — Number of Wells Needed for a Discovery
- Capital Constraint Optimisation — Selecting Projects Within a Fixed Budget
- Diversification Across Plays and Partners — Reducing Correlated Dry-Hole Risk
- Portfolio Rebalancing Triggers — When New Results Should Reshuffle Priorities

Day 9: Bias, Judgement and Decision Conversations

- Anchoring, Overconfidence and Optimism — Recognising Biased Range Estimates
- Calibration Exercises — Training Specialists to Widen Unrealistic Ranges
- Pre-Mortem Technique — Imagining Failure Before Committing Capital
- Dialogue Decision Process — Structuring Exchanges With Decision Boards
- Communicating Probabilities — Charts Executives Read Without Misinterpretation

Day 10: Practising the Decision Recommendation Pack

- Framing and Strategy Table for a Chosen Asset — Applying Days One and Two
- Decision Tree With Value of Information Test — Applying Days Four and Five
- Simulation and Option Valuation Run — Applying Days Six and Seven
- Bias Check and Peer Challenge — Applying Day Nine Techniques
- Decision Recommendation Pack — Final Presentation to a Simulated Decision Board

Applying Petroleum Decision Analysis and Value of Information After the Course

- Run a value of information test on the next planned seismic or appraisal spend and present whether it can change the development choice
- Hold a calibration and pre-mortem session on one prospect before its volumes go to the portfolio ranking

Petroleum Decision Analysis and Value of Information Questions FAQ

What is Petroleum Decision Analysis and Value of Information and why does it matter now?

It is the structured framing, probabilistic modelling and testing of exploration and development choices, including whether new data is worth buying. It matters now because data is costly, capital is limited and partners expect ranges rather than single-point forecasts.

Which roles gain most from Petroleum Decision Analysis and Value of Information?

Petroleum economists, reservoir engineers, geoscientists and asset planners gain most. Anyone who estimates volumes, builds project models or recommends appraisal and portfolio choices to a decision board will apply the methods directly.

How does Petroleum Decision Analysis and Value of Information differ from a petroleum project economics course?

It centres on framing choices, decision trees, Bayesian value of information, real options and bias rather than on cash flow construction and fiscal terms. Economics courses build the model; this one tests which decision the model should support.

What do you bring back from Petroleum Decision Analysis and Value of Information?

You bring back a decision recommendation pack for your own asset, with a strategy table, decision tree, value of information test, simulation results and a bias check. You also bring a shared vocabulary for discussing probabilities with decision boards.

Petroleum Decision Analysis and Value of Information: The Way Forward

The decision recommendation pack first informs whether the next appraisal or data purchase goes ahead or the asset moves straight to a development choice. Asset leaders, partners and portfolio committees use it to compare alternatives on the same footing. After its first use, revisit the elicited ranges against actual results, because look-backs are what calibrate the next decision.