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COURSE BROCHURE

# Economic and Technical Evaluation of Engineering Projects Training Course

6 – 10 June 2027
Doha

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# Economic and Technical Evaluation of Engineering Projects Training Course

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Economic and Technical Evaluation of Engineering Projects is a 1-week training course for engineers, project leads and maintenance managers who must justify technical investments, ending with an option evaluation dossier. Capital is scarce and plant is ageing, so organisations need decisions that weigh discounted cash flow and engineering merit side by side. Jupiter Prime Training delivers this course on Economic and Technical Evaluation of Engineering Projects.

## Why Economic and Technical Evaluation of Engineering Projects Matters Now

Finance committees demanding evidence, ageing assets competing with new capacity for budget, and energy pressures on running costs now shape how engineering investments are judged. An organisation that evaluates options well funds the projects that pay back and avoids stranded equipment; one that evaluates poorly locks in high operating costs for decades. Examples run across utilities, petrochemicals and manufacturing plants, where pumps, compressors and control systems compete for the same capital pool. The course rests on discounted cash flow practice, life-cycle cost and ISO 55001 asset management principles.

## Who Gains Most from Economic and Technical Evaluation of Engineering Projects

- Engineers who prepare the technical case and cost estimates for plant upgrades and new installations
- Project leads responsible for comparing design alternatives before a funding request
- Maintenance managers deciding between refurbishment, replacement and outsourcing of equipment
- Reliability specialists who quantify downtime, failure costs and availability gains
- Technical planners who rank capital requests across a site or portfolio

Cross-functional engineering groups gain most when an engineer, a maintenance manager and a cost estimator attend together.

## Economic and Technical Evaluation of Engineering Projects Capabilities

Participants turn engineering estimates into discounted cash flows and set them beside a scored technical comparison.

- Build incremental cash flow models for competing engineering options — capital approval committees
- Calculate net present value, internal rate of return and payback — investment ranking decisions
- Test option robustness with sensitivity and scenario analysis — risk owners and sponsors
- Design weighted technical scoring criteria for reliability, safety and operability — engineering design reviews
- Weigh life-cycle cost against technical performance in one matrix — asset owners and finance partners
- Communicate a recommended option with its assumptions and trade-offs — senior decision makers

## Key Economic and Technical Evaluation of Engineering Projects Terms

- Net Present Value NPV — the sum of a project's future cash flows discounted to today, minus the initial investment.
- Internal Rate of Return IRR — the discount rate at which a project's net present value equals zero.
- Payback Period — the time needed for cumulative cash inflows to recover the initial capital outlay.
- Discount Rate — the rate used to convert future cash flows into present value, reflecting capital cost and risk.
- Sensitivity Analysis — testing how a result changes when one input, such as energy price or capital cost, varies.
- Weighted Scoring Matrix — a table rating options against technical criteria, each multiplied by an agreed importance weight.

## Economic and Technical Evaluation of Engineering Projects Day by Day

## Day 1: Investment Context and Project Framing

- Capital Budgeting Cycle — Where Engineering Requests Compete for Funds
- Project Option Definition — Framing Do-Nothing, Refurbish and Replace Cases
- ISO 55001 Asset Management Principles — Linking Projects to Asset Objectives
- Time Value of Money — Why Future Savings Count for Less
- Stakeholder Requirements Register — Capturing Finance, Operations and Safety Needs

## Day 2: Building Engineering Cash Flows

- Capital Cost Estimating Classes — Choosing Accuracy for the Decision Stage
- Operating and Maintenance Cost Forecasts — Energy, Spares and Labour Drivers
- Incremental Cash Flow Method — Isolating the Effect of Each Option
- Depreciation, Tax and Residual Value — Adjusting Net Project Cash Flows
- Life-Cycle Cost Model — Comparing Total Ownership Cost Over Asset Life

## Day 3: Discounted Measures and Risk

- Net Present Value Calculation — Accepting or Rejecting a Single Option
- Internal Rate of Return and Modified IRR — Ranking Unequal Projects
- Simple and Discounted Payback — Judging Liquidity and Recovery Speed
- Equivalent Annual Cost — Comparing Options with Different Service Lives
- Sensitivity, Scenario and Break-Even Analysis — Exposing Critical Assumptions

## Day 4: Technical Option Scoring

- Technical Criteria Selection — Reliability, Safety, Operability and Maintainability
- Weighted Scoring Matrix — Turning Engineering Judgement into Comparable Scores
- Pairwise Comparison Weights — Agreeing Criterion Importance with Stakeholders
- Availability and Downtime Cost Estimates — Pricing Reliability Differences Between Options
- Technology Maturity and Obsolescence Review — Avoiding Unsupported Equipment Choices

## Day 5: Practising the Option Evaluation Dossier

- Combined Economic and Technical Ranking — Reconciling NPV with Technical Scores
- Case Study from Utilities and Petrochemicals — Pump Station versus Compressor Upgrade
- Assumption and Risk Log — Recording Inputs Behind Each Sensitivity Result
- Investment Recommendation Memo — Presenting Trade-Offs to an Approval Committee
- Option Evaluation Dossier — Completing the Combined Evaluation of Competing Options

## Applying Economic and Technical Evaluation of Engineering Projects After the Course

- Re-evaluate one pending capital request with an incremental cash flow model, NPV and a sensitivity chart before its next approval meeting.
- Agree a weighted technical scoring matrix with operations and maintenance colleagues and apply it to the next set of replacement candidates.

## Economic and Technical Evaluation of Engineering Projects Questions FAQ

### What is economic and technical evaluation of engineering projects and why does it matter now?

It is the combined assessment of an engineering option's cash returns and its technical merit. It matters now because budgets are tight, assets are ageing and decision makers expect both NPV evidence and engineering justification before approving spend.

## Which roles gain most from economic and technical evaluation of engineering projects?

Engineers, project leads and maintenance managers gain most. They prepare investment cases and must turn technical estimates into discounted cash flows and option rankings.

## How does economic and technical evaluation of engineering projects differ from a general project finance course?

It joins financial appraisal with engineering option scoring. Unlike a general project finance course on funding and valuation, it stays with plant-level choices such as refurbishment versus replacement.

## What do you bring back from economic and technical evaluation of engineering projects?

You bring back a worked evaluation of competing options. It holds cash flow models, NPV, IRR and payback results, sensitivity charts and a weighted technical matrix.

## Economic and Technical Evaluation of Engineering Projects: The Way Forward

The option evaluation dossier first informs which competing alternative goes forward for capital approval. Engineers, maintenance managers and finance partners use it to test assumptions and agree a ranking. After its first use, revisit the technical criteria weights and the discount rate, since both decide which option wins.