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COURSE BROCHURE

# Advanced Value Engineering and Function Analysis Training Course

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Dar es Salaam

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Registered in the United Kingdom and Saudi Arabia

# Advanced Value Engineering and Function Analysis Training Course

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Value Engineering and Function Analysis is the focus of this 2-week advanced training course for engineers, design managers and value study facilitators, who run a value study and write a value engineering proposal report. Capital owners now expect design teams to prove that every major element earns its cost across the whole asset life, not only at tender. Jupiter Prime Training delivers this course for professionals who lead those value studies.

## Why Value Engineering and Function Analysis Matters Now

Three groups now press for structured value studies: asset owners who judge designs on whole-life cost rather than capital cost alone, funders who ask for evidence that alternatives were tested, and designers who must protect performance while removing unnecessary cost. A study that follows a disciplined job plan uncovers savings and functional improvements early, when change is cheap; an ad hoc cost-cutting exercise strips quality and invites redesign. The course follows the SAVE International Value Methodology Standard, with its six-phase job plan and Function Analysis System Technique FAST diagramming, applied to buildings, infrastructure and industrial plant.

## Who Gains Most from Value Engineering and Function Analysis

- Design leads who decide which concepts proceed to detailed engineering
- Facilitators who plan and run multidisciplinary value study sessions
- Cost engineers who price alternatives and model whole-life cost
- Owners' representatives who accept or reject value proposals
- Operations and maintenance specialists who judge long-term performance impact

A capital projects organisation gains most when a design lead, a cost engineer and an operations representative attend together and return able to staff a value study from within.

## Value Engineering and Function Analysis Capabilities

Participants work through each phase of the job plan, from defining functions to defending proposals before a decision board.

- Apply the six-phase value methodology job plan to a live design — the sponsor commissioning the study
- Build FAST diagrams that separate basic and secondary functions — the design team challenging assumptions
- Calculate function cost and value index to target low-value elements — the cost engineer prioritising effort
- Design creative sessions that generate and screen alternatives without early judgement — the facilitator and study team
- Weigh alternatives using life cycle costing and weighted evaluation matrices — the owner judging whole-life value
- Communicate value proposals with risks, savings and implementation steps — the decision board accepting changes

## Key Value Engineering and Function Analysis Terms

- Value methodology — a structured, team-based process that improves value by analysing functions and finding alternatives that deliver them at lower cost
- Job plan — the sequence of information, function analysis, creative, evaluation, development and presentation phases that structures a value study
- FAST diagram — a logic diagram arranging functions by how and why relationships to reveal the critical path of function
- Function cost — the portion of an element's cost attributed to the function it performs, used to spot poor value
- Life cycle cost — the total cost of owning an asset across acquisition, operation, maintenance, renewal and disposal
- Value proposal — a documented alternative showing original and proposed design, cost and performance effects, risks and implementation steps

## Value Engineering and Function Analysis Day by Day

## Day 1: Value Thinking and the Standard

- SAVE International Value Methodology Standard — Framing Disciplined Value Studies
- Value Equation of Function, Performance and Cost — Defining What Improves Value
- Value Engineering Versus Cost Cutting — Protecting Required Performance
- Study Timing Across Project Stages — Choosing When Change Is Cheapest
- Value Study Charter — Setting Scope, Objectives and Sponsor Expectations

## Day 2: Pre-Study and Information Phase

- Pre-Study Data Collection — Gathering Drawings, Estimates and Constraints
- Cost Model and Pareto Breakdown — Locating High-Cost Elements
- Stakeholder and User Interviews — Capturing Performance Requirements
- Site and Operations Visits — Testing Assumptions Against Reality
- Information Phase Briefing — Aligning the Team on the Baseline Design

## Day 3: Function Identification

- Verb-Noun Function Definition — Describing What Each Element Does
- Basic and Secondary Function Classification — Separating Purpose From Support
- Random Function Determination — Listing Functions Before Structuring
- Required, Unwanted and Aesthetic Functions — Challenging Hidden Scope
- Function Worksheet — Linking Elements to the Functions They Serve

## Day 4: FAST Diagramming

- Technical FAST Diagram — Ordering Functions by How and Why Logic
- Customer-Oriented FAST — Reflecting User and Owner Needs
- Scope Lines and Critical Path of Function — Bounding the Study
- Supporting and All-the-Time Functions — Completing the Diagram
- FAST Review Session — Testing Logic With the Design Team

## Day 5: Function Costing and Targeting

- Function Cost Allocation — Spreading Element Costs Across Functions
- Value Index and Function Worth — Comparing Cost With Lowest Credible Cost
- Cost-to-Worth Ratios — Selecting Functions for Creative Effort
- Performance Attribute Mapping — Measuring Quality Alongside Cost
- Target Setting Matrix — Agreeing Where the Team Will Focus

## Day 6: Creative Phase

- Brainstorming Rules and Deferred Judgement — Expanding the Option Pool
- Morphological Analysis — Combining Sub-Solutions Systematically
- Benchmarking and Analogy Methods — Borrowing Solutions From Other Sectors
- Idea Capture Sheets — Recording Alternatives Against Functions
- Creative Session Facilitation — Managing Dominant Voices and Silence

## Day 7: Evaluation Phase

- First-Cut Screening Criteria — Filtering Ideas Quickly and Fairly
- Advantages and Disadvantages Listing — Exposing Trade-Offs Openly
- Weighted Evaluation Matrix — Scoring Alternatives Against Agreed Criteria
- Paired Comparison of Criteria — Setting Weights Transparently
- Shortlist Ranking — Selecting Ideas for Development

## Day 8: Life Cycle Costing

- Life Cycle Cost Model Structure — Capturing Acquisition to Disposal
- Discounting and Present Value — Comparing Costs Across Time
- Operation, Maintenance and Energy Profiles — Estimating Running Costs
- Sensitivity Analysis on Key Drivers — Testing Robustness of Choices
- Whole-Life Comparison Sheet — Presenting Alternatives on Equal Terms

## Day 9: Development and Presentation

- Value Proposal Write-Up — Documenting Original and Proposed Designs
- Implementation Risk Assessment — Flagging Schedule and Approval Impacts
- Savings and Performance Quantification — Stating Net Effects Clearly
- Decision Board Presentation — Defending Proposals Before Owners
- Implementation Tracking Log — Following Accepted Proposals to Completion

## Day 10: Practising the Value Engineering Proposal Report

- Case Study Information Phase — Applying Days 2 and 3 to a Live Design
- FAST and Costing Exercise — Applying Days 4 and 5 to Target Functions
- Mock Creative and Evaluation Session — Applying Days 6 and 7 as a Team
- Life Cycle Comparison — Applying Day 8 Models to Shortlisted Alternatives
- Value Engineering Proposal Report — Completing the Study Submission for Owners

## Applying Value Engineering and Function Analysis After the Course

- Facilitate a half-day function analysis session on one current design package and produce a FAST diagram the design team signs off
- Build a life cycle cost comparison for two competing equipment or material options and present the whole-life result to the owner's representative

## Value Engineering and Function Analysis Questions FAQ

### What is Value Engineering and Function Analysis and why does it matter now?

Value Engineering and Function Analysis is a structured way to improve value by examining what each design element must do and finding cheaper ways to do it. It matters now because owners judge projects on whole-life cost and expect evidence that alternatives were tested.

### Which roles gain most from Value Engineering and Function Analysis training?

Engineers, design managers and value study facilitators gain most. They shape concepts, price options and lead study sessions, so they need the job plan, FAST diagramming, life cycle costing and facilitation skills to produce proposals owners accept.

### How does Value Engineering and Function Analysis differ from a project cost control course?

It differs by changing the design rather than tracking spend against it. A cost control course monitors budgets and variances, while this one uses function analysis and creative alternatives to reduce cost or improve performance before money is committed.

## What do you bring back from Value Engineering and Function Analysis training?

You bring back a value engineering proposal report from a study you ran. It holds the function analysis, FAST diagram, evaluated alternatives, life cycle comparisons and implementation steps for a real design.

## Value Engineering and Function Analysis: The Way Forward

The value engineering proposal report first informs the owner's decision on which alternatives enter the design. Design leads carry accepted proposals forward, cost engineers update estimates, and operations teams confirm maintainability. After implementation, revisit the life cycle assumptions and actual savings to refine function worth benchmarks for the next study.