Life Cycle Cost Analysis (LCCA) Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

The Life Cycle Cost Analysis (LCCA) Training Course is designed to equip participants with advanced knowledge and practical skills in cost optimization, total cost of ownership (TCO), sustainable asset management, financial modeling, and investment decision-making. In today’s environment of increasing operational costs, climate-conscious investments, and digital transformation, organizations require professionals who can evaluate the complete economic performance of assets, projects, infrastructure, and systems throughout their entire life cycle. This course provides a structured approach to analyzing capital expenditure (CAPEX), operating expenditure (OPEX), maintenance costs, energy efficiency, replacement strategies, risk factors, and long-term financial impacts.

The program focuses on modern data-driven decision-making, predictive cost analysis, sustainability economics, and value-based engineering techniques used across industries such as construction, manufacturing, energy, transportation, facilities management, and infrastructure development. Participants will learn how to apply international best practices, financial evaluation models, and advanced analytical tools to improve asset reliability, investment performance, lifecycle sustainability, and organizational profitability. Through real-world case studies, interactive exercises, and practical simulations, learners will develop the confidence to implement LCCA strategies that support resilient and cost-effective business outcomes.

Programme Curriculum

Life Cycle Cost Analysis (LCCA) Training Course

Introduction

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Course Objectives

By the end of this Life Cycle Cost Analysis Training Course, participants will be able to:

1. Understand the principles and applications of Life Cycle Cost Analysis (LCCA) in modern asset management.
2. Apply Total Cost of Ownership (TCO) methodologies for strategic investment decisions.
3. Develop advanced CAPEX and OPEX optimization strategies.
4. Perform discounted cash flow (DCF) and financial evaluation techniques.
5. Analyze maintenance, renewal, and replacement cost scenarios.
6. Apply sustainability-focused cost analysis for green projects and ESG objectives.
7. Evaluate asset alternatives using value engineering and cost-benefit analysis.
8. Incorporate risk assessment and uncertainty modeling into lifecycle decisions.
9. Use digital tools and analytics for data-driven cost forecasting.
10. Improve asset performance through predictive maintenance economics.
11. Apply LCCA techniques for infrastructure, facilities, and industrial projects.
12. Develop business cases using return on investment (ROI) and financial modeling.
13. Implement international best practices for strategic asset management and lifecycle optimization.

Target Audience

1. Asset Managers and Reliability Professionals
2. Project Managers and Engineering Leaders
3. Cost Engineers and Estimation Specialists
4. Facilities Management Professionals
5. Procurement and Supply Chain Managers
6. Financial Analysts and Investment Planners
7. Sustainability and ESG Professionals
8. Government Infrastructure and Public Sector Decision Makers

Course Modules

Module 1: Fundamentals of Life Cycle Cost Analysis

- Introduction to **LCCA concepts, principles, and industry applications**
- Understanding lifecycle phases
- Difference between initial cost, operating cost, and lifecycle value
- Role of LCCA in **strategic asset management**
- Overview of international LCCA standards and practices
- **Case Study:** A government infrastructure project compares traditional construction methods with sustainable alternatives using lifecycle cost evaluation.

Module 2: Cost Structure and Total Cost of Ownership Analysis

- Understanding **Total Cost of Ownership (TCO)** frameworks
- Identifying direct, indirect, fixed, and variable lifecycle costs
- CAPEX versus OPEX optimization strategies
- Cost drivers affecting long-term asset performance
- Developing lifecycle cost breakdown structures
- **Case Study:** A manufacturing company evaluates equipment purchase options based on 20-year ownership costs instead of initial purchase price.

Module 3: Financial Modeling and Economic Evaluation Techniques

- Discount rates and time value of money concepts
- Net Present Value (NPV) calculations
- Internal Rate of Return (IRR) analysis
- Payback period and investment evaluation
- Developing financial models for lifecycle decisions
- **Case Study:** An energy company evaluates solar investment options using NPV and lifecycle savings analysis.

Module 4: Asset Performance, Maintenance, and Reliability Economics

- Linking LCCA with **predictive maintenance strategies**
- Maintenance cost forecasting models
- Reliability-centered maintenance (RCM) economics
- Failure cost assessment and risk impact analysis
- Optimizing maintenance versus replacement decisions
- **Case Study:** A transportation organization reduces fleet lifecycle costs by applying predictive maintenance analytics.

Module 5: Sustainability, Energy Efficiency, and Green LCCA

- Integrating **ESG and sustainability principles** into LCCA
- Carbon cost evaluation and environmental lifecycle impacts
- Energy-efficient asset investment analysis
- Green building lifecycle economics
- Supporting net-zero and circular economy strategies
- **Case Study:** A commercial building compares conventional HVAC systems with energy-efficient alternatives using LCCA.

Module 6: Risk Analysis and Advanced Lifecycle Cost Optimization

- Managing uncertainty in lifecycle cost forecasts

- Sensitivity analysis and scenario modeling
- Risk-based cost planning
- Inflation and escalation impact assessment
- Optimizing decisions under uncertain conditions
- **Case Study:** An infrastructure authority applies risk-based LCCA to evaluate bridge rehabilitation options.

Module 7: Digital Transformation and Data-Driven LCCA

- Using digital technologies for lifecycle cost management
- Applying analytics and dashboards for cost visibility
- Integration with BIM, digital twins, and asset information systems
- Predictive analytics for future cost forecasting
- Automation of lifecycle cost calculations
- **Case Study:** A facility management company uses digital twin technology to predict maintenance costs and optimize asset replacement cycles.

Module 8: Practical Implementation and Strategic Decision Making

- Developing professional LCCA reports and business cases
- Communicating lifecycle value to stakeholders
- Selecting optimal investment alternatives
- Implementing LCCA within organizational processes
- Creating continuous improvement strategies
- **Case Study:** A public infrastructure project uses LCCA results to justify long-term investment funding and operational savings.

Training Methodology

This course employs a participatory and hands-on approach to ensure practical learning, including:

- Interactive lectures and presentations.
- Group discussions and brainstorming sessions.
- Hands-on exercises using real-world datasets.
- Role-playing and scenario-based simulations.
- Analysis of case studies to bridge theory and practice.
- Peer-to-peer learning and networking.
- Expert-led Q&A sessions.
- Continuous feedback and personalized guidance.

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	27 Nov 2026	Online	$1,000
23 Nov 2026	27 Nov 2026	Physical	$1,500
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$3,000
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$4,500
23 Nov 2026	27 Nov 2026	Physical	$6,000
23 Nov 2026	27 Nov 2026	Physical	$6,000

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