Life Cycle Assessment (LCA): ISO 14040/14044, Carbon Footprint and EPDs

25 – 29 October 2027
Paris - Right Bank business hotel



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Ref: 251_11579 **Date:** 25 – 29 October 2027 **Location:** Paris - Right Bank business hotel **Fees:** 23500 SAR

Introduction:

Life cycle assessment LCA is how organisations test whether a product, material or design change actually lowers environmental impact, yet many studies are commissioned with a vague functional unit, mismatched system boundaries and unexamined database choices, producing results that cannot support a design, sourcing or marketing decision. This Core Concept course trains specialists to run and review product LCAs to the ISO 14040 and ISO 14044 framework, from goal and scope through inventory, impact assessment and interpretation. Participants build a working LCA model and leave with a Product LCA Study Report ready for critical review.

Course Objectives:

- Define the goal, functional unit, reference flows and system boundaries of a product LCA study in line with ISO 14040 and ISO 14044
- Compile a life cycle inventory from primary process data and background datasets with documented data quality and allocation choices
- Select an impact assessment method and calculate characterised results across climate, water, acidification and toxicity categories
- Interpret LCA results through contribution, sensitivity and uncertainty analysis and state the limits of each conclusion
- Distinguish a product carbon footprint from a full LCA and read environmental product declarations and their product category rules
- Produce a Product LCA Study Report that supports a design or procurement decision and is ready for critical review

Target Audience:

- Product development and eco-design specialists who compare material and design alternatives
- Process and manufacturing engineers who supply energy, material and waste data for product systems
- Sustainability and environmental specialists who commission or run product-level assessments
- Procurement and sourcing specialists who evaluate supplier EPDs and environmental product data
- Marketing and product compliance specialists who check environmental claims before release

Course Outline:

Day 1: Life Cycle Thinking Foundations and Product System Scoping

- Life Cycle Thinking: Raw Material Extraction to End-of-Life Stages
- LCA Applications: Eco-Design, Procurement Comparison and Market Claims
- Product Carbon Footprint Versus Multi-Impact LCA: Scope and Limits
- Attributional and Consequential LCA: Choosing the Modelling Question
- Existing Product Data Audit: Bills of Materials, Energy Use and Waste Records

Day 2: ISO 14040 and ISO 14044 Framework, Goal and Scope

- ISO 14040 Four-Phase Framework: Goal and Scope, Inventory, Impact Assessment, Interpretation
- Goal Statement: Intended Application, Audience and Comparative Assertion Intent
- Functional Unit and Reference Flow Definition for Competing Products
- System Boundary Options: Cradle-to-Gate, Cradle-to-Grave and Cradle-to-Cradle
- Cut-Off Criteria, Allocation Procedures and Multi-Output Process Rules

Day 3: Life Cycle Inventory and Impact Assessment Practice

- Process Flow Diagram and Unit Process Data Collection Sheets
- Foreground Data Versus Background Datasets from ecoinvent and National Databases
- Data Quality Indicators: Time, Geography and Technology Representativeness
- LCIA Method Selection: ReCiPe, TRACI and AWARE Water Scarcity
- Characterisation, Normalisation and Weighting of Impact Category Results

Day 4: Interpretation, Product Declarations, Review and Claims

- Contribution and Hotspot Analysis by Life Cycle Stage
- Sensitivity Analysis, Scenario Testing and Uncertainty Ranges
- ISO 14067 Product Carbon Footprint and PAS 2050 Comparison
- Environmental Product Declarations Under ISO 14025: Product Category Rules and EN 15804 at Overview
- Critical Review Process and Greenwashing Red Flags in Comparative Product Claims

Day 5: Product LCA Model Build and Study Report

- Packaging Redesign Case: Cradle-to-Grave Model of Two Alternatives
- Construction Material Procurement Case: Comparing Supplier EPD Results
- Eco-Design Option Screening Using Modelled Hotspot Results
- Product LCA Study Report Drafting with Limitations Statement
- Reviewer-Style Challenge Panel and Report Defence

Skills You Will Gain:

- Functional Unit Definition
- System Boundary Setting
- Life Cycle Inventory Modelling
- Impact Assessment Method Selection
- Sensitivity and Uncertainty Analysis
- EPD Interpretation
- Environmental Claim Substantiation
- LCA Study Reporting

Why Attend This Course:

- Return with a Product LCA Study Report and working model for a product or material from your own organisation
- Question an LCA or EPD supplied by a consultant or vendor and see where its boundaries or data weaken the result
- Decide when a product carbon footprint is enough and when a multi-impact study is needed
- Compare LCA practice with engineers, buyers and sustainability specialists from packaging, construction, manufacturing and consumer goods sectors

Conclusion:

A product LCA is only as useful as the choices behind it: the functional unit, the boundaries, the data and the method. The course moves from life cycle thinking and the ISO 14040 and ISO 14044 framework, through goal and scope, inventory and impact assessment, to interpretation, carbon footprints, environmental product declarations, critical review and claim checks. The final day turns these steps into a working model and a Product LCA Study Report that participants take back to guide design and sourcing decisions.