Advanced Life Cycle Assessment for Product Sustainability Training Course



21 - 25 Dec 2026

Cape town

4600 € (Per Person)

Ref: #SUS3352_284100

Course Introduction / Overview:

This comprehensive training course provides an in-depth exploration of Life Cycle Assessment (LCA), a critical methodology for evaluating the environmental impacts of products and services from cradle to grave. In an era where sustainability is paramount for corporate strategy and consumer trust, mastering LCA is no longer optional but essential for forward-thinking organizations. This program, offered by BIG BEN Training Center, is meticulously designed to move beyond foundational concepts into the advanced application and strategic integration of LCA. Participants will delve into the nuances of ISO 14040 and ISO 14044 standards, ensuring their practice is both robust and internationally recognized. Drawing upon the foundational work of experts like Michael Z. Hauschild, a leading figure in environmental assessment, the course emphasizes a holistic approach. It explores not just the environmental pillar but also integrates Life Cycle Costing (LCC) and Social LCA (S-LCA). This curriculum is inspired by the practical and comprehensive perspectives found in seminal texts such as "Life Cycle Assessment: Theory and Practice," providing a framework for turning complex data into actionable business intelligence, driving innovation in sustainable product design, and enhancing corporate environmental performance.

Target Audience / This training course is suitable for:

- Sustainability Managers and Specialists.
- Product Development Engineers and Designers.
- Environmental Consultants and Auditors.
- Research and Development (R&D) Professionals.
- Supply Chain and Procurement Managers.
- Corporate Social Responsibility (CSR) Officers.
- Quality Assurance and Control Managers.
- Regulatory Affairs Specialists.
- Corporate Strategists and Policy Makers.

Target Sectors and Industries:

- Manufacturing and Industrial Production.
- Consumer Packaged Goods (CPG).
- Electronics and Technology.
- Automotive and Transportation.
- Construction and Building Materials.
- Textiles and Apparel.
- Food and Beverage.
- Chemical and Pharmaceutical Industries.
- Governmental agencies and environmental regulatory bodies.
- Waste Management and Recycling.

Target Organizations Departments:

- Sustainability and Corporate Responsibility.
- Research and Development (R&D).
- Product Design and Engineering.
- Supply Chain Management and Logistics.
- Procurement and Sourcing.
- Environmental, Health, and Safety (EHS).
- Marketing and Communications.
- Strategic Planning and Business Development.
- Quality Management.
- Operations.

Course Offerings:

By the end of this course, the participants will have able to:

- Conduct a comprehensive Life Cycle Assessment (LCA) compliant with ISO 14040/14044 standards.
- Define a clear goal and scope for an LCA study to meet specific business objectives.
- Master techniques for Life Cycle Inventory (LCI) data collection, validation, and management.
- Perform a detailed Life Cycle Impact Assessment (LCIA) using various characterization models.
- Critically interpret and evaluate LCA results to identify environmental hotspots and improvement opportunities.
- Integrate Life Cycle Costing (LCC) and Social LCA (S-LCA) for a holistic sustainability assessment.
- Apply LCA findings to inform eco-design, circular economy strategies, and sustainable innovation.
- Communicate complex LCA results effectively to diverse stakeholders, including management and customers.
- Develop and critique Environmental Product Declarations (EPDs).
- Analyze the sensitivity and uncertainty of LCA results for robust decision-making.

Course Methodology:

The training methodology at BIG BEN Training Center is designed to be immersive, practical, and highly interactive, ensuring participants can translate theoretical knowledge into real-world application. This course moves beyond traditional lectures by integrating a dynamic blend of expert-led presentations, in-depth case study analyses of real products, and collaborative group workshops. Participants will engage in hands-on exercises that simulate the key phases of an LCA study, from goal and scope definition to impact assessment and interpretation. Team-based problem-solving activities will challenge attendees to tackle complex sustainability scenarios, fostering critical thinking and collaborative skills. A significant portion of the course is dedicated to interactive sessions where participants can discuss challenges, share experiences, and receive personalized feedback from the instructor. This learner-centric approach ensures that concepts are not just understood but mastered, empowering attendees with the confidence and competence to implement advanced LCA methodologies within their own organizations immediately upon completion of the training.

Course Agenda (Course Units):

Unit One: Foundations and Scoping of Life Cycle Assessment

- Introduction to Life Cycle Thinking and Sustainability.
- Historical development and evolution of LCA.
- The ISO 14040 and 14044 standards frameworks.
- Defining the Goal and Scope of an LCA study.
- Identifying the functional unit and system boundaries.
- Understanding different LCA types (e.g., cradle-to-grave, cradle-to-gate).
- Critical review process and its importance.

Unit Two: Life Cycle Inventory (LCI) Analysis

- Principles of data collection for LCI.
- Primary versus secondary data sources.
- Working with LCA databases (e.g., Ecoinvent, GaBi).
- Allocation procedures and system expansion.
- Data quality assessment and documentation.
- Creating process flow diagrams for product systems.
- Practical exercises in inventory data compilation.

Unit Three: Life Cycle Impact Assessment (LCIA)

- The framework of LCIA according to ISO 14044.
- Selection of impact categories, indicators, and characterization models.
- Understanding midpoint and endpoint approaches.
- Classification and characterization steps.
- Optional elements: Normalization, grouping, and weighting.
- Interpreting LCIA results to identify key environmental drivers.
- Case study analysis of impact assessments for different products.

Unit Four: Advanced LCA Methodologies and Interpretation

- Conducting sensitivity and uncertainty analysis.
- Introduction to Life Cycle Costing (LCC).
- Fundamentals of Social Life Cycle Assessment (S-LCA).
- Integrating environmental, economic, and social pillars.
- Comparative LCA and the risk of misleading claims.
- Handling complex systems and recycling in LCA.
- Advanced hotspot analysis and contribution analysis.

Unit Five: Strategic Application and Communication of LCA

- Using LCA for eco-design and product innovation.
- LCA's role in developing circular economy business models.
- Creating Environmental Product Declarations (EPDs) and Product Environmental Footprints (PEFs).
- Developing effective strategies for communicating LCA results.
- Integrating LCA into corporate sustainability reporting and strategy.
- Future trends and emerging challenges in Life Cycle Assessment.
- Final project workshop: Applying LCA principles to a real-world scenario.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As LCA methodologies become more sophisticated, how can organizations balance the need for detailed, accurate data with the practical constraints of time and resources in fast-paced product development cycles?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by moving beyond the procedural execution of a Life Cycle Assessment to focus on its strategic integration into core business functions. While many programs teach the "how" of LCA, we emphasize the "why" and "so what," empowering participants to use LCA as a powerful tool for innovation, risk management, and competitive advantage. The curriculum is uniquely structured to bridge the gap between technical analysis and strategic decision-making. It delves into advanced and often-overlooked topics such as Social LCA (S-LCA) and Life Cycle Costing (LCC), providing a truly holistic, triple-bottom-line perspective on product sustainability. Rather than focusing on a single software tool, the course builds a deep, tool-agnostic understanding of LCA principles, ensuring the skills learned are transferable and enduring. Through rigorous case studies and interactive workshops, participants learn not just to generate data but to interpret it critically, communicate it persuasively, and translate its insights into tangible improvements in product design, supply chain management, and corporate strategy, making it an invaluable asset for any professional serious about leading sustainability initiatives.