Embodied Carbon Analysis Training Course

Professional Development Training Course Outline

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

Course Introduction

Embodied Carbon Analysis is rapidly becoming a cornerstone of sustainable construction, net-zero buildings, and climate-resilient infrastructure development. As global regulations tighten around carbon neutrality, ESG reporting, Scope 3 emissions, and whole-life carbon assessment, professionals in architecture, engineering, and construction are increasingly required to quantify and reduce carbon emissions embedded in building materials and processes. Embodied Carbon Analysis Training Course provides a comprehensive foundation in Life Cycle Assessment (LCA), carbon footprinting, green building certification frameworks (LEED, BREEAM), and embodied carbon calculation methodologies, enabling participants to make data-driven decisions for low-carbon design and procurement.

With the acceleration of green building standards, decarbonization strategies, and sustainable materials innovation, embodied carbon has become a critical KPI for governments, developers, and corporate sustainability teams. This course bridges theory and practice by integrating carbon accounting tools, environmental product declarations (EPDs), digital twin technologies, and BIM-based carbon modeling workflows. Participants will gain hands-on expertise in evaluating material impacts, optimizing design alternatives, and aligning projects with net-zero carbon goals, circular economy principles, and global climate action frameworks such as the Paris Agreement.

Programme Curriculum

Embodied Carbon Analysis Training Course

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Course Duration

5 days

Course Objectives

1. Understand Embodied Carbon, Whole-Life Carbon & Net Zero Construction
2. Apply Life Cycle Assessment (LCA) methodologies (ISO 14040/44)
3. Analyze Scope 1, Scope 2, and Scope 3 emissions in construction projects
4. Evaluate carbon footprint of building materials and systems
5. Use BIM-integrated carbon analysis tools for digital construction
6. Interpret Environmental Product Declarations (EPDs) and material datasets
7. Implement low-carbon design strategies in early-stage planning
8. Compare green building certifications (LEED, BREEAM, WELL)
9. Conduct decarbonization strategy development for infrastructure projects
10. Integrate circular economy principles in material selection
11. Assess supply chain emissions and procurement sustainability
12. Use carbon benchmarking and performance indicators (kgCO?e/m²)
13. Develop net-zero carbon roadmaps for construction projects

Target Audience

1. Architects and Design Consultants
2. Civil and Structural Engineers
3. Sustainability and ESG Professionals
4. Construction Project Managers
5. Quantity Surveyors and Cost Engineers
6. Urban Planners and Infrastructure Developers
7. Government and Regulatory Authorities
8. Real Estate Developers and Investors

Course Modules

Module 1: Introduction to Embodied Carbon

- Definition of embodied vs operational carbon
- Global climate impact of construction sector

- Carbon accounting principles
- Net-zero building frameworks
- Overview of carbon reduction pathways
- **Case Study:** Analysis of carbon emissions in a mid-rise commercial building project and identification of high-impact materials.

Module 2: Life Cycle Assessment (LCA) Fundamentals

- ISO 14040/44 standards overview
- Cradle-to-grave vs cradle-to-gate analysis
- Functional units and system boundaries
- Data collection techniques
- Impact assessment categories
- **Case Study:** LCA comparison between concrete and timber structural systems in residential buildings.

Module 3: Carbon Emissions in Building Materials

- Cement, steel, aluminum carbon intensity
- Sustainable material alternatives
- Recycled and bio-based materials
- Material lifecycle emissions
- Supplier carbon transparency
- **Case Study:** Substituting conventional steel with recycled steel to reduce embodied carbon in an industrial facility.

Module 4: BIM & Digital Carbon Modeling

- BIM integration for carbon tracking
- Digital twin applications
- Parametric design for carbon optimization
- Software tools overview
- Real-time carbon feedback systems
- **Case Study:** BIM-based optimization of a hospital project achieving 18% carbon reduction.

Module 5: Environmental Product Declarations (EPDs)

- Structure and interpretation of EPDs
- Verified carbon data sources
- Product comparison techniques
- Database usage
- Procurement decision-making
- **Case Study:** Selecting low-carbon insulation materials for a green school project using EPD datasets.

Module 6: Green Building Certifications & Compliance

- LEED, BREEAM, WELL frameworks
- Embodied carbon credits and requirements
- Regulatory compliance trends
- Sustainability reporting standards
- Certification documentation
- **Case Study:** Achieving LEED Gold through embodied carbon reduction strategies in an office tower.

Module 7: Carbon Reduction Strategies

- Design optimization techniques
- Material efficiency and reuse
- Modular construction benefits
- Circular economy integration
- Renewable material sourcing
- **Case Study:** Modular housing project reducing embodied carbon by 30% through prefabrication.

Module 8: Net Zero & Decarbonization Roadmaps

- Net-zero carbon definitions
- Corporate decarbonization strategies
- Carbon offsetting vs reduction
- Policy and regulatory frameworks
- Future trends in low-carbon construction
- **Case Study:** Development of a national infrastructure decarbonization roadmap for a transport corridor project.

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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