Solar Building Design Training Course

Professional Development Training Course Outline

Category	Architectural Engineering	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Solar Building Design Training Course is designed to focus on sustainable architecture, energy-efficient construction, and solar-integrated building systems. With the global shift toward net-zero energy buildings, green infrastructure, and carbon-neutral cities, this training equips learners with the essential skills to design and implement high-performance solar-powered structures. The course blends architectural design principles, photovoltaic (PV) system integration, passive solar strategies, and smart energy management systems to create future-ready professionals in the green building industry.

As climate change accelerates and energy costs rise, the demand for experts in solar architecture, green building certification (LEED, BREEAM), renewable energy engineering, and sustainable urban development continues to grow. This program provides hands-on expertise in solar orientation, building energy simulation, daylight optimization, and smart grid connectivity, enabling participants to contribute to low-carbon cities and energy-positive buildings. It is designed for engineers, architects, and sustainability professionals aiming to lead the global transition toward clean energy building design and climate-resilient infrastructure.

Programme Curriculum

Solar Building Design Training Course

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10 days

Course Objectives

1. Master Solar Passive Design Principles for Buildings
2. Understand Photovoltaic (PV) System Integration in Architecture
3. Develop skills in Net Zero Energy Building (NZEB) Design
4. Apply Green Building Certification Standards (LEED/BREEAM)
5. Learn Climate Responsive Architecture Techniques
6. Optimize Building Energy Efficiency & Thermal Performance
7. Design with Daylight Harvesting & Natural Ventilation Systems
8. Implement Smart Energy Management Systems in Buildings
9. Conduct Solar Irradiation & Site Analysis Studies
10. Integrate Renewable Energy Systems in Urban Planning
11. Use Building Information Modeling (BIM) for Solar Design
12. Apply Carbon Footprint Reduction Strategies in Construction
13. Design Sustainable Smart Cities with Solar Infrastructure

Target Audience

1. Architects & Architectural Designers
2. Civil & Structural Engineers
3. Electrical & Energy Engineers
4. Urban Planners & City Developers
5. Sustainability & ESG Consultants
6. Construction Project Managers
7. Renewable Energy Professionals
8. Students in Architecture, Engineering & Environmental Sciences

Course Modules

Module 1: Fundamentals of Solar Architecture

- Solar geometry & building orientation
- Climate-responsive design basics
- Solar path analysis techniques
- Passive heating & cooling principles
- Case Study: Solar passive homes in Germany reducing 60% energy use

Module 2: Solar Energy Systems in Buildings

- PV systems overview
- Grid-tied vs off-grid systems
- Solar panel efficiency factors
- Energy storage integration
- Case Study: Tesla Solar Roof installations in California homes

Module 3: Net Zero Energy Building Design

- NZEB concepts & standards
- Energy balance calculations
- Renewable integration strategies
- Building envelope optimization
- Case Study: Bullitt Center (Seattle – world's greenest commercial building)

Module 4: Passive Solar Design Strategies

- Thermal mass utilization
- Natural ventilation design
- Shading devices & insulation
- Orientation optimization
- Case Study: Indian vernacular passive cooling architecture

Module 5: Green Building Certification Systems

- LEED certification levels
- BREEAM standards overview
- EDGE certification basics
- Compliance documentation
- Case Study: LEED Platinum Bank of America Tower (NYC)

Module 6: Building Energy Simulation Tools

- Energy modeling software (EnergyPlus, DesignBuilder)
- Load calculations
- Simulation accuracy techniques
- Optimization workflows
- Case Study: Dubai sustainable skyscraper simulations

Module 7: Solar Site Analysis & Mapping

- Solar radiation analysis
- GIS integration for solar planning
- Shadow impact studies
- Terrain-based design adaptation
- Case Study: Solar farm planning in Spain

Module 8: Smart Building Technologies

- IoT in building energy systems
- Smart meters & automation
- AI-based energy optimization
- Real-time monitoring systems

- Case Study: Singapore smart eco-buildings

Module 9: Sustainable Materials in Solar Design

- Low-carbon construction materials
- Thermal insulation materials
- Recycled & eco-friendly materials
- Embodied energy assessment
- Case Study: EcoBrick housing projects in Africa

Module 10: Building Integrated Photovoltaics (BIPV)

- BIPV system design
- Façade-integrated solar panels
- Roofing integration techniques
- Electrical connectivity systems
- Case Study: Swiss BIPV commercial buildings

Module 11: Urban Solar Planning

- Solar zoning regulations
- Smart city energy planning
- District energy systems
- Public infrastructure integration
- Case Study: Masdar City (UAE sustainable city model)

Module 12: Energy Storage & Hybrid Systems

- Battery storage technologies
- Hybrid renewable systems
- Load balancing strategies
- Backup energy systems
- Case Study: Microgrid systems in rural India

Module 13: Climate Adaptation in Building Design

- Climate risk assessment
- Heat island effect reduction
- Flood-resilient architecture
- Adaptive design frameworks
- Case Study: Netherlands floating houses

Module 14: Solar Retrofit & Building Upgrades

- Retrofitting old buildings
- Energy efficiency upgrades
- Solar panel retrofitting methods
- Cost-benefit analysis
- Case Study: European residential retrofit programs

Module 15: Capstone Project – Solar Smart Building Design

- End-to-end solar building design

- Energy modeling & simulation
- Sustainable architectural planning
- Presentation & evaluation
- Case Study: Student-designed net-zero prototype buildings

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

Ready to enroll or request a customized program? Book online or contact us:

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