Electrical Systems in Buildings 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

Electrical Systems in Buildings Training Course is designed to equip learners with advanced knowledge and practical skills in building electrical installation, power distribution systems, smart building automation, energy efficiency, and electrical safety compliance. This course integrates modern engineering standards, electrical design principles, and emerging technologies such as smart grids, IoT-enabled building systems, and sustainable energy integration to meet the growing demand for efficient and safe building infrastructure.

In today’s rapidly evolving construction and infrastructure sector, electrical systems play a critical role in ensuring operational efficiency, safety, and sustainability. This training provides hands-on exposure to electrical wiring design, load calculations, protection systems, lighting design, renewable energy integration, and building management systems (BMS). Learners will gain the ability to design, install, maintain, and troubleshoot complex electrical systems in residential, commercial, and industrial buildings using globally accepted codes and standards.

Programme Curriculum

Electrical Systems in Buildings Training Course

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Course Objectives

1. Understand building electrical systems design principles
2. Apply electrical installation standards and codes (IEC/NEC)
3. Perform accurate load calculations and power distribution planning
4. Design safe and efficient wiring systems for buildings
5. Implement electrical protection systems (circuit breakers, relays, grounding)
6. Develop skills in lighting design and energy-efficient solutions
7. Integrate renewable energy systems (solar PV, hybrid systems)
8. Configure smart building automation systems (BMS & IoT integration)
9. Enhance knowledge of electrical safety and risk assessment
10. Conduct fault diagnosis and troubleshooting of electrical systems
11. Optimize energy management and sustainability in buildings
12. Interpret and create electrical schematics and blueprints
13. Manage electrical maintenance and lifecycle asset management

Target Audience

1. Electrical Engineering Students
2. Building Services Engineers
3. Electrical Technicians and Installers
4. Construction Project Managers
5. Facility Maintenance Engineers
6. HVAC and MEP Engineers
7. Renewable Energy Specialists
8. Technical Trainers and Vocational Instructors

Course Modules

Module 1: Fundamentals of Electrical Building Systems

- Electrical principles and circuits
- AC/DC systems in buildings
- Electrical components overview
- Basic wiring methods
- Safety fundamentals
- **Case Study:** Residential apartment basic wiring design and safety compliance review

Module 2: Electrical Design & Load Calculation

- Load estimation techniques

- Demand factor analysis
- Circuit sizing methods
- Power distribution layouts
- Electrical drafting basics
- **Case Study:** Designing electrical load plan for a mid-rise commercial building

Module 3: Wiring Systems & Installation Practices

- Conduit and cable selection
- Wiring regulations compliance
- Installation techniques
- Panel board setup
- Earthing systems
- **Case Study:** Office building complete wiring installation project

Module 4: Electrical Protection Systems

- Circuit breakers and fuses
- Surge protection devices
- Relay coordination
- Grounding and earthing systems
- Fault current analysis
- **Case Study:** Fault protection system design for a hospital facility

Module 5: Lighting Design & Energy Efficiency

- Lighting calculation methods
- LED and smart lighting systems
- Daylight integration
- Energy-saving strategies
- Lighting control systems
- **Case Study:** Energy-efficient lighting retrofit in a shopping mall

Module 6: Smart Building Automation Systems (BMS)

- Introduction to BMS
- Sensors and controllers
- IoT integration in buildings
- HVAC and lighting automation
- Remote monitoring systems
- **Case Study:** Smart automation implementation in a luxury hotel

Module 7: Renewable Energy Integration

- Solar PV systems in buildings
- Hybrid energy systems
- Net metering concepts
- Energy storage systems
- Grid integration
- **Case Study:** Solar-powered residential estate implementation project

Module 8: Electrical Maintenance & Troubleshooting

- Preventive maintenance strategies
- Fault detection techniques
- Electrical testing instruments
- System diagnostics
- Lifecycle asset management
- **Case Study:** Industrial building electrical failure diagnosis and repair 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
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

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

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