Building Energy Management Systems (BEMS) 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

Building Energy Management Systems (BEMS) are at the core of modern smart buildings, smart cities, and net-zero energy strategies, enabling real-time monitoring, automation, and optimization of energy consumption across commercial, industrial, and residential infrastructure. With rising global energy costs, carbon neutrality targets, and ESG compliance requirements, BEMS has become a critical driver of energy efficiency, decarbonization, and sustainable facility management. Building Energy Management Systems (BEMS) Training Course provides a comprehensive, hands-on understanding of advanced BEMS technologies, including IoT integration, AI-powered analytics, cloud-based energy platforms, and automated control systems that enhance building performance while reducing operational costs.

The course is designed to equip professionals with practical and technical expertise in HVAC optimization, smart grid integration, renewable energy monitoring, and predictive energy analytics. Participants will learn how to design, implement, and manage intelligent energy systems that align with global sustainability frameworks such as LEED, BREEAM, and ISO 50001. By combining theory with real-world applications, this program empowers learners to transform traditional buildings into energy-efficient, data-driven smart infrastructures capable of achieving measurable carbon reduction and operational excellence.

Programme Curriculum

Building Energy Management Systems (BEMS) Training Course

Introduction

Building Energy Management Systems (BEMS) are at the core of modern smart buildings, smart cities, and net-zero energy strategies, enabling real-time monitoring, automation, and optimization of energy consumption across commercial, industrial, and residential infrastructure. With rising global energy costs, carbon neutrality

targets, and ESG compliance requirements, BEMS has become a critical driver of energy efficiency, decarbonization, and sustainable facility management. Building Energy Management Systems (BEMS) Training Course provides a comprehensive, hands-on understanding of advanced BEMS technologies, including IoT integration, AI-powered analytics, cloud-based energy platforms, and automated control systems that enhance building performance while reducing operational costs.

The course is designed to equip professionals with practical and technical expertise in HVAC optimization, smart grid integration, renewable energy monitoring, and predictive energy analytics. Participants will learn how to design, implement, and manage intelligent energy systems that align with global sustainability frameworks such as LEED, BREEAM, and ISO 50001. By combining theory with real-world applications, this program empowers learners to transform traditional buildings into energy-efficient, data-driven smart infrastructures capable of achieving measurable carbon reduction and operational excellence.

Course Duration

5 days

Course Objectives

1. Master Smart Building Energy Management Systems (BEMS) architecture
2. Implement IoT-enabled energy monitoring solutions
3. Optimize HVAC energy efficiency and automation systems
4. Apply AI-driven predictive energy analytics
5. Understand real-time energy data acquisition and visualization
6. Design cloud-based energy management platforms
7. Integrate renewable energy systems (solar, wind) into BEMS
8. Improve carbon footprint reduction strategies for buildings
9. Develop skills in energy auditing and benchmarking (ISO 50001)
10. Enhance fault detection and diagnostics (FDD) systems
11. Implement demand response and peak load management
12. Strengthen smart grid and microgrid integration techniques
13. Achieve expertise in sustainable building operations and ESG compliance

Target Audience

1. Facility managers and building operators
2. Energy engineers and sustainability consultants
3. Electrical and mechanical engineers
4. HVAC system designers and technicians
5. Smart building technology integrators
6. Renewable energy professionals
7. Construction and infrastructure developers
8. Government energy and environmental policy officers

Course Modules

Module 1: Introduction to Smart Buildings and BEMS

- Evolution of building automation systems
- Core components of BEMS architecture
- Energy flow in modern buildings

- Role of IoT in smart infrastructure
- Sustainability frameworks and compliance standards
- **Case Study:** Smart retrofit of a commercial office building reducing energy consumption by 28% using integrated BEMS.

Module 2: HVAC Optimization and Control Systems

- HVAC system fundamentals
- Energy-efficient cooling and heating strategies
- Sensor-based automation controls
- Occupancy-based climate control systems
- Fault detection in HVAC operations
- **Case Study:** Hospital HVAC optimization project achieving 35% energy savings through automated airflow regulation.

Module 3: IoT and Sensor Integration in Energy Systems

- IoT architecture in smart buildings
- Wireless sensor networks for energy tracking
- Edge computing for real-time data processing
- Smart meters and data acquisition systems
- Device interoperability standards
- **Case Study:** University campus IoT deployment enabling real-time energy tracking across 40 buildings.

Module 4: Data Analytics and AI in Energy Management

- Big data in energy systems
- Machine learning for energy prediction
- AI-based anomaly detection
- Energy consumption forecasting models
- Dashboard visualization tools
- **Case Study:** Retail chain using AI analytics to reduce peak-hour energy costs by 22%.

Module 5: Renewable Energy Integration

- Solar PV integration with BEMS
- Wind energy monitoring systems
- Hybrid energy system management
- Energy storage optimization
- Grid-tied vs off-grid systems
- **Case Study:** Industrial facility integrating solar + battery storage reducing grid dependency by 40%.

Module 6: Energy Efficiency and Carbon Reduction Strategies

- Energy auditing techniques
- Carbon footprint assessment
- Green building certifications (LEED/BREEAM)
- Efficiency benchmarking tools
- Sustainable retrofit strategies
- **Case Study:** Commercial tower achieving LEED Gold certification through deep energy retrofitting.

Module 7: Smart Grid and Demand Response Systems

- Smart grid fundamentals
- Load balancing and peak shaving
- Demand response mechanisms
- Utility interaction models
- Microgrid integration
- **Case Study:** Smart district project reducing peak demand charges by 30% using demand response systems.

Module 8: Cybersecurity and Future of BEMS

- Cybersecurity risks in smart buildings
- Secure IoT communication protocols
- Cloud security for energy systems
- Blockchain in energy transactions
- Future trends in autonomous buildings
- **Case Study:** Smart city deployment implementing blockchain-based secure energy trading platform.

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

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

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com