المباني الذكية: دمج التكنولوجيا لأماكن فعالة ومستدامة

Duration: 5 Days

Language: ar

Course Code: IND04 - 130

Objective

By the end of the course, participants will be able to:

- Understand the concept and architecture of smart buildings.
- Integrate IoT, AI, and automation technologies into building operations.
- Design and manage intelligent systems for lighting, HVAC, security, and energy.
- Analyse building data for predictive maintenance and operational efficiency.
- Ensure cybersecurity, compliance, and sustainability in smart environments.

Audience

This course is ideal for:

- Facility and building managers.
- Engineers and architects in smart infrastructure.
- Sustainability and energy efficiency officers.
- Urban planners and municipal officials.
- Real estate developers and consultants.
- IT and systems integrators in the built environment sector.

Training Methodology

This course adopts a practical and engaging training methodology designed to balance theoretical understanding with real-world application. Participants will take part in interactive lectures that break down complex smart building concepts into clear, actionable insights. Each session combines expert-led instruction with live demonstrations to showcase the functionality of various smart systems used in building automation, energy efficiency, and environmental control.

Group discussions, peer-to-peer collaboration, and guided problem-solving activities further enhance the learning experience by encouraging diverse perspectives and practical brainstorming. This interactive approach is supported by hands-on tasks and continuous feedback from instructors to ensure participants can confidently apply what they've learned. By the end of the course, learners will have developed both the strategic vision and technical awareness needed to contribute to or lead smart building initiatives in a rapidly evolving sector.

Summary

Smart buildings are revolutionising the way we interact with physical spaces—enhancing efficiency, safety, comfort, and sustainability through integrated technologies. This course provides a comprehensive overview of smart building systems, including IoT-enabled infrastructure, energy management, automation, and real-time data analytics.

Participants will gain hands-on understanding of how to plan, implement, and manage smart building solutions that reduce costs, lower environmental impact, and improve occupant experience. Real-world examples and technical walkthroughs will help professionals link design with performance outcomes.

Course Content & Outline

Section 1: Introduction to Smart Buildings

- Definition and key features of smart buildings.
- Evolution from traditional to intelligent infrastructure.
- Overview of smart building ecosystems and stakeholders.
- Key performance indicators: Comfort, efficiency, safety.
- Global trends and market outlook.

Section 2: Core Technologies and Infrastructure

- IoT architecture and sensor networks for smart buildings.
- Smart lighting, HVAC, water, and energy management systems.
- Role of Building Management Systems (BMS) and Digital Twins.
- Wired vs. wireless protocols (Zigbee, LoRaWAN, Wi-Fi, BACnet).
- Case study: Integrated smart systems in a commercial facility.

Section 3: Data Analytics and Automation

- Collecting and managing building data streams.
- Applying AI and machine learning for building automation.
- Predictive maintenance using real-time analytics.
- Adaptive occupancy control and comfort optimisation.
- Dashboards and visualisation tools for performance monitoring.

Section 4: Sustainability and Energy Efficiency

- Smart energy systems: Load balancing and demand response.
- Green certifications (LEED, WELL, BREEAM) in smart buildings.
- Renewable integration: Solar, wind, and smart grids.
- Waste and water management with intelligent systems.
- Case study: Net-zero smart building strategy.

Section 5: Cybersecurity, Compliance, and User Experience

- Security risks in connected building environments.
- Cybersecurity frameworks and best practices for IoT systems.
- Regulatory standards for smart infrastructure.
- Designing for user comfort, accessibility, and digital interaction.
- Final activity: Draft a smart building implementation roadmap.

Certificate Description

عند إتمام هذه الدورة التدريبية بنجاح، سيحصل المشاركون على شهادة إتمام التدريب من Holistique Training.
وبالنسبة للذين يحضرون ويكملون الدورة التدريبية عبر الإنترنت، سيتم تزويدهم بشهادة إلكترونية (e-Certificate)
من Holistique Training.

وخدمة اعتماد التطوير المهني (BAC) معتمدة من المجلس البريطاني للتقييم Holistique Training شهادات
29993 ISOاو 21001 ISOاو ISO 9001 كما أنها معتمدة وفق معايير ،(CPD) المستمر.

لهذه الدورة من خلال شهاداتنا، وستظهر هذه النقاط على شهادة إتمام (CPD) يتم منح نقاط التطوير المهني المستمر
واحدة عن كل ساعة CPD يتم منح نقطة ،CPD ووفقًا لمعايير خدمة اعتماد Holistique Training. التدريب من
لأي دورة واحدة نقدمها حاليًا CPD حضور في الدورة. ويمكن المطالبة بحد أقصى قدره 50 نقطة.

Categories

الهندسة, التكنولوجيا

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