Smart Network Applications for Smart Cities & Buildings Training Course



14 - 18 Dec 2026

Barcelona

5900 € (Per Person)

Ref: #NO3926_51687

Course Introduction / Overview:

This comprehensive training course is designed to provide a deep understanding of smart network applications in the context of smart cities and buildings. As urban environments become increasingly connected, the underlying network infrastructure is crucial for managing and enabling new technologies. This course goes beyond basic networking. It explores how networks are leveraged to create integrated, intelligent systems for everything from energy management and public safety to smart transportation and building automation. Participants will learn about the Internet of Things (IoT) in an urban context, the role of 5G and other wireless technologies, and the implementation of secure and scalable network architectures. We will delve into topics such as sensor networks, data analytics for urban services, and the security challenges of a highly interconnected environment. Drawing from the work of leading experts like Dr. Zaigham Mahmood, whose research on smart cities is highly influential, this program at BIG BEN Training Center combines theoretical principles with real-world case studies. The curriculum is built to address the unique demands of smart infrastructure, including the challenges of data privacy, interoperability, and system resilience. By the end of this course, you will be equipped to design and manage the intelligent networks that are essential for the future of urban development.

Target Audience / This training course is suitable for:

- Urban planners and civil engineers.
- IT and network architects.
- IoT specialists and solution developers.
- Public sector employees in urban management.
- Real estate developers and building managers.
- Energy and utility managers.
- Systems integrators and technology consultants.

Target Sectors and Industries:

- Urban and regional planning.
- Real estate and construction.
- Public administration and government agencies.
- Energy and utilities.
- Telecommunications and technology.
- Transportation and logistics.
- Safety and security.

Target Organizations Departments:

- Smart Cities Initiatives.
- Information Technology (IT) and Network Infrastructure.
- Urban Planning and Development.
- Building Management and Operations.
- Public Works and Utilities.
- Security and Emergency Services.
- Technology and Innovation.

Course Offerings:

By the end of this course, the participants will have able to:

- Design network architectures for smart buildings and cities.
- Implement IoT applications for urban services.
- Secure smart city infrastructure against cyber threats.
- Analyze data from sensor networks to improve urban management.
- Evaluate the role of 5G, Wi-Fi 6, and other wireless technologies.
- Manage network interoperability in a multi-vendor environment.
- Develop strategies for sustainable and resilient smart networks.

Course Methodology:

This training course at BIG BEN Training Center uses a highly practical and case-study-driven methodology. The goal is to provide participants with the skills to apply network theory to the complexities of urban and building environments. The course combines instructor-led sessions with interactive exercises, allowing participants to work on real-world scenarios. We will analyze case studies of successful and failed smart city projects from around the globe, discussing the network-related factors that determined their outcome. Collaborative problem-solving sessions will be a core part of the learning experience, with participants working in groups to design a network for a hypothetical smart building or city district. The instructor will provide personalized feedback on these projects and facilitate discussions. This methodology ensures that every participant not only understands the theoretical concepts but also gains the practical experience necessary to plan and implement smart network applications in their own professional context.

Course Agenda (Course Units):

Unit One: Introduction to Smart Networks

- The concept of smart cities and smart buildings.
- The foundational role of networks and data.
- Key technologies for smart infrastructure.
- Network architecture for IoT and sensor networks.
- Data collection and analysis in urban environments.
- Case study: A public transportation system network.
- The role of digital twins in network planning.

Unit Two: Network Infrastructure and Connectivity

- Fiber optic, wireless, and cellular network technologies.
- Understanding 5G and its applications.
- Wi-Fi 6 and smart building connectivity.
- LoRaWAN and other low-power wide-area networks (LPWAN).
- Network interoperability and standards.
- Designing a resilient network backbone.
- The challenge of network scalability.

Unit Three: Smart Building Applications

- Network design for building automation systems (BAS).
- Implementing smart energy and lighting solutions.
- HVAC control and management through networks.
- Smart security and access control systems.
- Data analytics for building efficiency.
- The integration of multiple building systems.
- Case study: Network design for a smart office tower.

Unit Four: Smart City Applications and Services

- Intelligent transportation systems (ITS).
- Network applications for public safety and emergency services.
- Smart waste management and environmental monitoring.
- Smart street lighting and energy grids.
- Data platforms for urban services.
- User-facing applications for smart cities.
- Case study: A city-wide public Wi-Fi network.

Unit Five: Security, Privacy, and Future Trends

- Cybersecurity risks in smart cities and buildings.
- Securing IoT devices and networks.
- Data privacy and compliance challenges.
- Developing a network security strategy.
- The future of smart networks, including AI and machine learning.
- The impact of Edge Computing.
- Final project: Presenting a smart network solution.
- Frequently Asked Questions:

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

As smart networks become more pervasive, what ethical considerations and data privacy challenges must urban planners and network designers address to ensure citizen trust and security?

What unique qualities does this course offer compared to other courses?

This course provides a unique and holistic perspective by linking network technology directly to the physical environments of smart cities and buildings. Unlike generic networking or IoT courses, it is specifically tailored to address the challenges of urban and building infrastructure. The curriculum goes beyond basic connectivity. It focuses on how networks enable and integrate a wide range of applications, from smart grids and transportation to building automation and public safety. We use a case-study-driven approach, analyzing real-world projects to understand the complexities and lessons learned in a practical context. This means participants will not just learn about technologies, but also how to implement them to solve tangible urban problems. The course also places a strong emphasis on security and data privacy, which are critical but often overlooked aspects of smart infrastructure. It offers a comprehensive blend of technical, strategic, and practical knowledge that is essential for anyone involved in building the intelligent environments of the future.