Intelligent Infrastructure Systems 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

The Intelligent Infrastructure Systems Training Course is designed to equip learners with advanced competencies in Smart Infrastructure, AIoT (Artificial Intelligence of Things), Digital Twins, Edge Computing, Smart Cities Technologies, and Data-Driven Infrastructure Management. As global infrastructure evolves into interconnected, sensor-driven ecosystems, this course provides deep insights into how IoT networks, cloud platforms, machine learning, and real-time analytics are transforming transportation, energy, water systems, and urban planning.

Participants will explore how modern infrastructure integrates 5G connectivity, predictive maintenance systems, GIS mapping, BIM (Building Information Modeling), cybersecurity frameworks, and autonomous monitoring systems. The program bridges engineering, data science, and urban systems design, enabling professionals to build resilient, sustainable, and intelligent infrastructure ecosystems aligned with global Industry 4.0 and Smart City

Programme Curriculum

Intelligent Infrastructure Systems Training Course

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Course Duration

5 days

Course Objectives

1. Understand Smart Infrastructure Ecosystems & AIoT Integration
2. Apply Digital Twin Technology for Real-Time Infrastructure Simulation
3. Design scalable IoT Sensor Networks for Smart Cities
4. Implement Predictive Maintenance using Machine Learning Algorithms
5. Analyze infrastructure data using Big Data & Advanced Analytics
6. Develop Edge Computing Solutions for Low-Latency Systems
7. Integrate 5G Networks in Intelligent Infrastructure Operations
8. Enhance infrastructure resilience using Cybersecurity Frameworks
9. Utilize GIS & Spatial Intelligence for Urban Planning
10. Apply BIM (Building Information Modeling) in Infrastructure Projects
11. Optimize energy systems using Smart Grid Technologies
12. Build automation workflows using Cloud-Native Infrastructure Platforms
13. Enable sustainable development through Green Smart City Technologies

Target Audience

1. Civil & Infrastructure Engineers
2. Smart City Planners & Urban Developers
3. IoT & Embedded Systems Engineers
4. Data Scientists & AI Engineers
5. Government Policy Makers & Urban Administrators
6. Energy & Utility Sector Professionals
7. IT & Cloud Infrastructure Architects
8. Graduate Students in Engineering, ICT, and Urban Studies

Course Modules

Module 1: Foundations of Intelligent Infrastructure Systems

- Overview of Smart Infrastructure Ecosystems
- Evolution from Traditional to Intelligent Infrastructure
- Role of AI, IoT, and Big Data in infrastructure
- System architecture of connected infrastructure
- Introduction to Industry 4.0 frameworks
- **Case Study:** Smart City transformation model of Singapore using integrated digital infrastructure systems.

Module 2: IoT & Sensor Networks in Smart Infrastructure

- IoT architecture for urban systems

- Sensor deployment strategies
- Data acquisition and transmission protocols
- Wireless communication technologies (LoRa, 5G)
- Real-time monitoring systems
- **Case Study:** Barcelona Smart City IoT-based waste management and street lighting optimization.

Module 3: Artificial Intelligence & Predictive Analytics

- Machine learning for infrastructure optimization
- Predictive maintenance models
- Anomaly detection in infrastructure systems
- AI-driven decision support systems
- Data visualization techniques
- **Case Study:** AI-based railway predictive maintenance system in Japan Railways.

Module 4: Digital Twin Technology & Simulation

- Concept of Digital Twins in infrastructure
- Real-time simulation environments
- Integration with IoT and AI systems
- Lifecycle management of assets
- Visualization and modeling tools
- **Case Study:** Digital Twin implementation in Dubai Smart City infrastructure management.

Module 5: Smart Energy & Smart Grid Systems

- Smart grid architecture
- Renewable energy integration
- Energy demand forecasting
- Distributed energy resources (DERs)
- Grid automation and control systems
- **Case Study:** Germany's Energiewende smart grid transformation project.

Module 6: Smart Transportation & Mobility Systems

- Intelligent Transport Systems (ITS)
- Traffic prediction and optimization
- Autonomous vehicle infrastructure integration
- Smart traffic signal control systems
- Mobility-as-a-Service (MaaS) platforms
- **Case Study:** London Congestion Management System using AI-based traffic control.

Module 7: Cybersecurity in Intelligent Infrastructure

- Infrastructure cybersecurity frameworks
- Threat detection and mitigation systems
- Secure IoT device communication
- Data privacy and governance
- Blockchain applications in infrastructure security
- **Case Study:** Cybersecurity reinforcement in US smart grid infrastructure systems.

Module 8: Cloud, Edge Computing & Smart Infrastructure Integration

- Cloud-native infrastructure platforms
- Edge computing for real-time processing
- Hybrid cloud architectures
- Infrastructure-as-Code (IaC)
- Scalable smart infrastructure deployment
- **Case Study:** Amazon AWS-powered smart city pilot project in South Korea.

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:

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