Smart City Systems Engineering Training Course

Professional Development Training Course Outline

Category	Architectural Engineering	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Smart cities represent the future of urban development, integrating IoT (Internet of Things), Artificial Intelligence (AI), Big Data Analytics, 5G connectivity, Cloud Computing, and Digital Twin technologies to create efficient, sustainable, and resilient urban ecosystems. Smart City Systems Engineering Training Course is designed to equip professionals with advanced skills in urban digital transformation, intelligent infrastructure, smart mobility, energy optimization, and data-driven governance systems. Participants will gain hands-on expertise in designing, deploying, and managing next-generation smart city solutions that improve quality of life, reduce environmental impact, and enhance operational efficiency across urban systems.

With rapid global urbanization and the rise of Industry 4.0, green cities, and sustainable smart infrastructure, governments and organizations are investing heavily in intelligent city frameworks. This training provides a comprehensive understanding of GIS systems, edge computing, sensor networks, cybersecurity for smart cities, AI-driven decision systems, and integrated urban platforms. Learners will be prepared to contribute to cutting-edge projects involving smart transportation, intelligent energy grids, e-governance platforms, and real-time urban monitoring systems, making them highly valuable in today's competitive digital economy.

Programme Curriculum

Smart City Systems Engineering Training Course

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Course Duration

10 days

Course Objectives

1. Master Smart City Architecture Design & Systems Engineering
2. Understand IoT-enabled urban infrastructure ecosystems
3. Apply AI and Machine Learning in city automation systems
4. Develop expertise in Digital Twin and simulation modeling
5. Implement Smart Transportation and Intelligent Traffic Systems
6. Analyze Big Data for urban decision-making and governance
7. Design Smart Energy Grids and renewable integration systems
8. Apply GIS mapping and spatial intelligence technologies
9. Enhance knowledge of 5G and edge computing in smart cities
10. Build secure systems using Cybersecurity frameworks for urban networks
11. Develop Smart Water and Waste Management solutions
12. Integrate Cloud-based Smart City Platforms and APIs
13. Implement Sustainable and Green Urban Development models

Target Audience

- Urban planners and civil engineers
- ICT and IoT system developers
- Government policy makers and smart city consultants
- Data scientists and AI engineers
- Infrastructure and utility management professionals
- Telecom and network engineers (5G/Edge Computing)
- Transportation and logistics specialists
- Graduate students in engineering, IT, and urban studies

Course Modules

Module 1: Smart City Foundations

- Urbanization trends & smart city evolution
- Core components of smart cities
- Systems engineering principles
- Smart governance frameworks

- Sustainability integration
- **Case Study:** Singapore Smart Nation initiative

Module 2: IoT in Smart Cities

- Sensor networks architecture
- IoT protocols (MQTT, CoAP)
- Device integration frameworks
- Real-time monitoring systems
- IoT security fundamentals
- **Case Study:** Barcelona IoT-enabled city services

Module 3: Artificial Intelligence in Urban Systems

- AI models for city automation
- Predictive analytics for infrastructure
- Machine learning for traffic control
- NLP for citizen services
- AI decision engines
- **Case Study:** Dubai AI-powered city operations

Module 4: Digital Twin Technology

- Urban digital replica modeling
- Simulation frameworks
- Real-time data integration
- Scenario analysis systems
- Predictive city planning
- **Case Study:** Virtual Singapore Digital Twin

Module 5: Smart Transportation Systems

- Intelligent traffic management
- Autonomous vehicle integration
- Smart parking systems
- Mobility-as-a-Service (MaaS)
- Public transport optimization
- **Case Study:** London smart mobility system

Module 6: Smart Energy Systems

- Smart grids architecture
- Renewable integration
- Energy optimization algorithms
- Demand-response systems
- Smart metering
- **Case Study:** Copenhagen carbon-neutral energy system

Module 7: Smart Water Management

- IoT water monitoring
- Leak detection systems

- Smart irrigation systems
- Water quality analytics
- Flood prediction models
- **Case Study:** Amsterdam water resilience system

Module 8: Smart Waste Management

- Automated waste collection systems
- AI-based waste classification
- Recycling optimization
- Sensor-enabled bins
- Route optimization systems
- **Case Study:** Seoul smart waste automation

Module 9: GIS & Spatial Intelligence

- Geographic data systems
- Urban mapping technologies
- Spatial analytics
- Remote sensing integration
- Smart zoning systems
- **Case Study:** New York GIS urban planning system

Module 10: 5G & Edge Computing

- 5G network architecture
- Edge computing frameworks
- Low-latency applications
- Real-time data processing
- Network slicing
- **Case Study:** South Korea 5G smart city rollout

Module 11: Smart Governance & E-Government

- Digital public services
- Citizen engagement platforms
- Blockchain for governance
- Smart identity systems
- Transparency systems
- **Case Study:** Estonia e-Government model

Module 12: Cybersecurity in Smart Cities

- Urban cyber risk analysis
- IoT security frameworks
- Threat detection systems
- Data privacy laws
- Critical infrastructure protection
- **Case Study:** Smart city cybersecurity in Tokyo

Module 13: Cloud & Data Platforms

- Cloud architecture for cities
- Big data integration
- API ecosystems
- Data lakes & warehouses
- Real-time analytics platforms
- **Case Study:** AWS-powered smart city solutions (global deployments)

Module 14: Sustainable Urban Development

- Green infrastructure planning
- Carbon-neutral city models
- Climate resilience systems
- Smart building technologies
- ESG compliance frameworks
- **Case Study:** Masdar City sustainability project (UAE)

Module 15: Smart City Capstone Project

- End-to-end system design
- Integration of all smart modules
- Real-world simulation deployment
- Performance optimization
- Presentation & evaluation
- **Case Study:** Integrated Smart City prototype development

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	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

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

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