Smart Water Infrastructure Training Course

Professional Development Training Course Outline

Category	Construction Institute	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

Smart Water Infrastructure Training Course is designed to equip professionals with advanced knowledge and practical skills in digital water management, smart water networks, IoT-enabled water systems, artificial intelligence (AI), data analytics, and sustainable water solutions. As cities and industries face increasing challenges related to water scarcity, climate change, aging infrastructure, and rising operational costs, smart water technologies are becoming essential for building resilient, efficient, and future-ready water ecosystems. This comprehensive program explores the integration of Internet of Things (IoT), smart sensors, predictive analytics, GIS-based water management, digital twins, automation, and real-time monitoring platforms to improve water efficiency, reduce losses, and enhance infrastructure performance.

The course provides industry-focused insights into the development and implementation of Smart Water Grids, Advanced Metering Infrastructure (AMI), intelligent leakage detection systems, wastewater optimization technologies, and sustainable urban water management strategies. Through global best practices and real-world case studies, participants will gain expertise in transforming traditional water utilities into digitally enabled, data-driven, and climate-resilient infrastructure systems. This training supports governments, utilities, engineers, consultants, and technology professionals in achieving water security, operational excellence, and sustainable development goals (SDGs).

Programme Curriculum

Smart Water Infrastructure Training Course

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Course Duration

5 days

Course Objectives

By completing this Smart Water Infrastructure Training Course, participants will be able to:

1. Understand the fundamentals of smart water infrastructure transformation and digital water ecosystems.
2. Develop knowledge of IoT-based water monitoring and intelligent sensor networks.
3. Apply Artificial Intelligence (AI) and Machine Learning (ML) for water demand forecasting and predictive maintenance.
4. Learn strategies for implementing Smart Water Grids and advanced distribution networks.
5. Understand Advanced Metering Infrastructure (AMI) and smart water metering technologies.
6. Identify methods for real-time water quality monitoring and contamination detection.
7. Apply data analytics and cloud-based platforms for water infrastructure optimization.
8. Improve strategies for non-revenue water (NRW) reduction and leakage management.
9. Explore the role of Digital Twin technology in water infrastructure planning and management.
10. Develop skills in GIS-based water asset management and spatial analytics.
11. Understand climate adaptation approaches for resilient and sustainable water systems.
12. Evaluate innovative solutions for energy-efficient water and wastewater operations.
13. Implement global best practices for smart cities, sustainable water governance, and future-ready infrastructure.

Target Audience

1. Water utility managers and executives
2. Civil, environmental, and water engineers
3. Smart city planners and urban development professionals
4. Government water authorities and policymakers
5. Infrastructure consultants and project managers
6. IoT, AI, and digital transformation professionals
7. Environmental sustainability specialists
8. Researchers, academics, and technology solution providers

Course Modules

Module 1: Fundamentals of Smart Water Infrastructure

- Evolution from traditional water systems to **digital water ecosystems**
- Principles of **smart water networks and intelligent infrastructure**
- Role of IoT, automation, and connectivity in water management
- Challenges of urbanization, water scarcity, and climate resilience
- Global trends shaping the future of smart water utilities
- **Case Study: Singapore Smart Water Management System**

Module 2: IoT and Sensor Technologies for Smart Water Networks

- Deployment of **IoT-enabled smart sensors** for water monitoring
- Real-time data collection from pipelines and treatment facilities
- Wireless communication technologies for water infrastructure
- Sensor-based leakage detection and asset monitoring
- Cybersecurity considerations for connected water systems
- **Case Study: Barcelona Smart Water Network**

Module 3: Smart Water Grids and Advanced Metering Infrastructure (AMI)

- Design and operation of **smart water distribution networks**
- Smart meters and automated data collection systems
- Demand management using real-time consumption analytics
- Reducing non-revenue water through digital monitoring
- Integration of AMI with utility management platforms
- **Case Study: Tucson Water Smart Meter Program, USA**

Module 4: Artificial Intelligence and Data Analytics in Water Management

- Application of AI and Machine Learning in water operations
- Predictive analytics for maintenance and failure prevention
- Water demand forecasting models
- Automated decision-making through intelligent platforms
- Big data applications for utility optimization
- **Case Study: UK Water Utilities AI-Based Leakage Detection Programs**

Module 5: Digital Twin Technology and Smart Asset Management

- Introduction to **digital twins for water infrastructure**
- Virtual modeling of pipelines, treatment plants, and networks
- Predictive simulation and infrastructure planning
- Asset lifecycle management using digital technologies
- Improving operational visibility through real-time dashboards
- **Case Study: Danish Water Digital Twin Initiatives**

Module 6: Smart Water Quality Monitoring and Treatment Systems

- Advanced water quality sensors and monitoring platforms
- Real-time contamination detection technologies
- Smart wastewater treatment optimization
- Remote monitoring and automated control systems
- Sustainable water recycling and reuse technologies
- **Case Study: alifornia Water Reuse Projects**

Module 7: GIS, Cloud Platforms, and Cybersecurity for Water Infrastructure

- GIS-based mapping of water assets and networks
- Cloud computing applications in water management
- Data visualization and operational dashboards
- Cybersecurity risks in critical water infrastructure
- Protecting smart water networks from digital threats
- **Case Study: Netherlands Digital Water Management Platforms**

Module 8: Future Trends, Sustainability, and Smart Water Cities

- Smart water solutions for climate-resilient cities
- Integration of renewable energy with water systems
- Circular economy approaches for water management
- Sustainable Development Goals (SDGs) and water security
- Future innovations including AI, robotics, and autonomous systems
- **Case Study: Dubai Smart City Water Initiatives**

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