Urban Drainage Systems 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

Urban drainage systems are a critical component of climate-resilient infrastructure, smart city development, and sustainable urban planning. Rapid urbanization, increasing impervious surfaces, and extreme weather events have intensified the need for advanced stormwater management, flood risk reduction, and nature-based drainage solutions. Urban Drainage Systems Training Course equips professionals with practical knowledge of modern drainage design, hydraulic modelling, green infrastructure, urban flood management, and sustainable water management strategies. Participants will gain expertise in developing resilient drainage networks that support urban adaptation, environmental protection, and long-term infrastructure sustainability.

The course integrates engineering principles, digital technologies, climate adaptation strategies, and global best practices to address current challenges in urban water management. Through real-world applications and international case studies, participants will explore innovative approaches including Sustainable Urban Drainage Systems (SuDS), Low Impact Development (LID), smart monitoring systems, GIS-based planning, flood modelling, and integrated water management frameworks. This training enables engineers, planners, consultants, and decision-makers to design and manage drainage systems that enhance urban resilience, public safety, and sustainable development goals (SDGs).

Programme Curriculum

Urban Drainage Systems Training Course

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Course Duration

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Course Objectives

By completing this Urban Drainage Systems Training Course, participants will be able to:

1. Understand the principles of urban drainage engineering and sustainable water infrastructure planning.
2. Develop skills in stormwater management strategies for rapidly growing urban areas.
3. Apply climate-resilient drainage design approaches to reduce flood vulnerability.
4. Master concepts of Sustainable Urban Drainage Systems (SuDS) and green infrastructure.
5. Analyze rainfall data using hydrological modelling and advanced forecasting techniques.
6. Improve expertise in hydraulic network design and drainage optimization.
7. Utilize GIS technology and digital mapping tools for drainage planning.
8. Apply smart city technologies for real-time drainage monitoring and control.
9. Evaluate urban flood risk assessment and mitigation frameworks.
10. Integrate nature-based solutions (NBS) into urban drainage projects.
11. Enhance decision-making through data-driven infrastructure management.
12. Develop sustainable approaches aligned with climate change adaptation goals.
13. Implement international best practices for future-ready urban drainage systems.

Target Audience

1. Civil Engineers and Infrastructure Engineers
2. Urban Planners and City Development Professionals
3. Municipal Water and Drainage Authorities
4. Environmental Engineers and Sustainability Specialists
5. Hydrologists and Water Resource Managers
6. Construction and Infrastructure Project Managers
7. Consulting Engineers and Design Professionals
8. Government Agencies and Smart City Development Teams

Course Modules

Module 1: Fundamentals of Urban Drainage Systems

- Urban hydrology and drainage system fundamentals
- Components of urban drainage networks
- Surface runoff generation and management

- Conventional versus sustainable drainage approaches
- Drainage planning within smart cities
- **Case Study: Singapore Integrated Drainage Management System**

Module 2: Stormwater Management and Flood Control

- Stormwater collection and conveyance systems
- Flood prevention and mitigation strategies
- Rainfall intensity analysis
- Detention and retention systems
- Emergency drainage planning
- **Case Study: Copenhagen Cloudburst Management Plan**

Module 3: Sustainable Urban Drainage Systems (SuDS)

- Principles of SuDS design
- Green roofs and rain gardens
- Permeable pavement systems
- Bioswales and infiltration systems
- Ecosystem-based drainage solutions
- **Case Study: Portland Green Infrastructure Program**

Module 4: Hydraulic Design and Drainage Modelling

- Hydraulic calculations and design standards
- Pipe network analysis
- Flood simulation techniques
- Drainage capacity assessment
- Hydraulic modelling software applications
- **Case Study: London Thames Tideway Project**

Module 5: GIS, Remote Sensing and Smart Drainage Technologies

- GIS-based drainage mapping
- Remote sensing applications
- Digital twins for urban infrastructure
- IoT-based monitoring systems
- Smart flood warning technologies
- **Case Study: Barcelona Smart City Water Management System**

Module 6: Climate Change Adaptation and Urban Resilience

- Climate impact assessment
- Extreme rainfall scenarios
- Resilient infrastructure planning
- Adaptation strategies
- Disaster risk reduction frameworks
- **Case Study: Rotterdam Climate Adaptation Strategy**

Module 7: Operation, Maintenance and Asset Management

- Drainage inspection techniques

- Preventive maintenance planning
- Asset management systems
- Performance monitoring
- Rehabilitation strategies
- **Case Study: Tokyo Urban Flood Management System**

Module 8: Future Trends and Advanced Urban Drainage Solutions

- Artificial intelligence in drainage management
- Digital twins and predictive analytics
- Circular water management
- Net-zero infrastructure concepts
- Future smart drainage networks
- **Case Study: Melbourne Integrated Water Management Approach**

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

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