EPANET Modeling 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

EPANET Modeling Training Course is designed to develop advanced skills in water distribution system modeling, hydraulic simulation, network analysis, and smart water management solutions. This industry-focused training enables engineers, consultants, utilities professionals, and researchers to master EPANET software, a globally recognized open-source tool for analyzing water supply networks, pressure optimization, flow analysis, pump operations, water quality simulation, and sustainable urban water infrastructure planning. Participants gain practical expertise in building hydraulic models, calibrating networks, performing scenario analysis, and applying digital water technologies for efficient water resource management.

With increasing demand for smart cities, resilient water infrastructure, IoT-enabled water networks, and sustainable engineering solutions, EPANET modeling has become an essential skill for modern water professionals. This training combines theoretical concepts with hands-on exercises, real-world datasets, and industry case studies to help participants solve complex challenges in water distribution optimization, leakage reduction, energy efficiency, network reliability, and climate-resilient water systems. The course prepares professionals to implement data-driven decisions and deliver high-performance water network designs using advanced modeling techniques.

Programme Curriculum

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Course Duration

5 days

Course Objectives

1. Understand the fundamentals of hydraulic modeling and water distribution system simulation.
2. Develop professional skills in EPANET software operation and network model development.
3. Learn advanced techniques for water supply network analysis and optimization.
4. Create, edit, and validate hydraulic models for urban and industrial water systems.
5. Perform pressure, flow, velocity, and demand analysis for distribution networks.
6. Apply water quality modeling and contaminant transport simulation techniques.
7. Master pump scheduling, reservoir analysis, and energy optimization strategies.
8. Learn model calibration, validation, and performance evaluation methods.
9. Analyze network scenarios using digital twin concepts and smart water technologies.
10. Apply EPANET models for leak detection, NRW reduction, and asset management.
11. Develop sustainable solutions for climate-adaptive and resilient water infrastructure.
12. Interpret modeling results for engineering decision-making and infrastructure planning.
13. Build industry-ready expertise in GIS integration, automation, and advanced hydraulic simulation workflows.

Target Audience

1. Water Resources Engineers
2. Hydraulic Engineers and Civil Engineers
3. Municipal Water Utility Professionals
4. Environmental Engineers
5. Infrastructure Planning Consultants
6. GIS and Smart City Professionals
7. Researchers and Academic Professionals
8. Engineering Students and Fresh Graduates

Course Modules

Module 1: Introduction to Water Distribution Modeling and EPANET

- Overview of hydraulic modeling concepts and digital water management
- Introduction to EPANET interface, tools, and applications
- Understanding pipes, nodes, pumps, valves, reservoirs, and tanks

- Fundamentals of pressure-driven and demand-driven modeling
- Industry applications of EPANET in urban water networks
- **Case Study:** Development of a basic EPANET model for a municipal water supply network.

Module 2: EPANET Installation, Interface, and Model Development

- Installing and configuring EPANET modeling software
- Creating new water distribution network projects
- Input data preparation and model structure development
- Defining network components and system parameters
- Importing and managing engineering datasets
- **Case Study:** Creating a digital hydraulic model for a residential water distribution system.

Module 3: Hydraulic Simulation and Network Analysis

- Performing steady-state and extended-period simulations
- Pressure and flow distribution analysis
- Pipe sizing and hydraulic performance evaluation
- Identifying network bottlenecks and operational issues
- Optimizing system reliability and efficiency
- **Case Study:** Hydraulic assessment of an expanding urban water network.

Module 4: Water Quality Modeling and Contaminant Simulation

- Principles of water quality simulation
- Chlorine decay and disinfectant modeling
- Contaminant transport analysis
- Water age calculation and quality monitoring
- Improving drinking water safety through modeling
- **Case Study:** Chlorine residual optimization in a city water distribution system.

Module 5: Pumps, Tanks, Valves, and Energy Optimization

- Modeling pumps and operational controls
- Reservoir and storage tank simulations
- Pressure management using valves
- Pump efficiency and energy consumption analysis
- Reducing operational costs through optimization
- **Case Study:** Energy-efficient pump scheduling for a water utility network.

Module 6: Model Calibration, Validation, and Data Integration

- Importance of model calibration techniques
- Field data collection and verification methods
- Pressure and flow measurement analysis
- Model accuracy improvement strategies
- Integration with GIS and asset management systems
- **Case Study:** Calibration of an EPANET model using real utility monitoring data.

Module 7: Advanced EPANET Applications and Smart Water Networks

- Smart water network concepts and digital transformation

- Integration with GIS platforms and IoT sensors
- Scenario planning and predictive analysis
- Leakage management and NRW reduction strategies
- Digital twin applications in water infrastructure
- **Case Study:** Smart water network optimization using sensor-based monitoring.

Module 8: Professional Project Development and Industry Applications

- Complete EPANET model development workflow
- Real-world engineering project simulation
- Model reporting and visualization techniques
- Decision-support applications for utilities
- Best practices for professional hydraulic modeling
- **Case Study:** Complete water distribution master plan simulation project.

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

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