# Wastewater Engineering Training Course

Professional Development Training Course Outline

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

## Course Introduction

Water scarcity, rapid urbanization, industrial expansion, and increasingly stringent environmental regulations have made Wastewater Engineering one of the fastest-growing disciplines in environmental infrastructure. Organizations across municipal, industrial, commercial, and utility sectors are investing heavily in advanced wastewater treatment technologies, resource recovery, water reuse, circular economy practices, energy-efficient treatment systems, and smart water management to achieve sustainability goals. Wastewater Engineering Training Course equips professionals with cutting-edge knowledge in wastewater treatment processes, industrial effluent management, biological treatment technologies, membrane filtration, nutrient removal, sludge management, digital monitoring, and regulatory compliance while integrating global best practices and real-world engineering applications.

The course combines theoretical foundations with practical engineering design, operational excellence, process optimization, and technology innovation through interactive learning, simulation exercises, and industry case studies. Participants will gain expertise in wastewater treatment plant (WWTP) design, process control, SCADA-enabled monitoring, Industrial Internet of Things (IIoT), AI-driven predictive maintenance, Net Zero water strategies, ESG compliance, and climate-resilient wastewater management. By the end of the program, participants will possess the technical competencies required to improve plant performance, minimize operational costs, enhance environmental compliance, and implement sustainable wastewater management solutions.

## Programme Curriculum

**Wastewater Engineering Training Course**

**Introduction**

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**Course Duration**

5 days

**Course Objectives**

1. Understand advanced wastewater engineering principles and treatment technologies.
2. Design efficient Wastewater Treatment Plants (WWTPs) using international engineering standards.
3. Optimize biological wastewater treatment processes for enhanced performance.
4. Apply membrane technologies (MBR, UF, RO, NF) in industrial and municipal wastewater treatment.
5. Improve industrial effluent treatment and pollution prevention strategies.
6. Implement water reuse and water recycling systems for sustainable operations.
7. Develop effective sludge treatment, biosolids management, and resource recovery solutions.
8. Utilize SCADA, IoT, AI analytics, and smart sensors for digital wastewater management.
9. Ensure compliance with environmental regulations, ESG standards, and wastewater discharge guidelines.
10. Conduct process optimization, troubleshooting, and operational risk assessment.
11. Integrate energy-efficient technologies and carbon reduction strategies into wastewater systems.
12. Perform comprehensive wastewater quality monitoring, laboratory analysis, and performance evaluation.
13. Implement circular economy and climate-resilient wastewater management strategies for sustainable development.

**Target Audience**

- Environmental Engineers
- Civil Engineers
- Water and Wastewater Treatment Plant Operators
- Industrial Process Engineers
- Municipal Utility Engineers
- Environmental Consultants
- Sustainability and ESG Professionals
- Project Managers, Researchers, and Government Regulatory Officers

**Course Modules**

**Module 1: Fundamentals of Wastewater Engineering**

- Principles of wastewater engineering
- Wastewater characteristics and pollutant identification
- Wastewater collection and conveyance systems
- Environmental regulations and discharge standards
- Introduction to wastewater treatment technologies
- **Case Study:** Modernization of a municipal wastewater treatment plant to meet stricter discharge regulations.

**Module 2: Wastewater Treatment Processes**

- Preliminary treatment systems
- Primary sedimentation and clarification
- Secondary biological treatment
- Tertiary and advanced treatment technologies
- Process selection criteria
- **Case Study:** Performance improvement of an activated sludge treatment plant.

**Module 3: Industrial Wastewater Management**

- Industrial wastewater characterization
- Chemical and physical treatment methods
- Heavy metal removal technologies
- Zero Liquid Discharge (ZLD) concepts
- Industrial compliance strategies
- **Case Study:** Textile industry wastewater recycling and Zero Liquid Discharge implementation.

**Module 4: Advanced Biological Treatment Technologies**

- Activated sludge optimization
- Sequencing Batch Reactors (SBR)
- Moving Bed Biofilm Reactor (MBBR)
- Membrane Bioreactor (MBR)
- Nutrient removal technologies
- **Case Study:** Upgrading conventional activated sludge to MBBR for increased treatment capacity.

**Module 5: Sludge Treatment and Resource Recovery**

- Sludge thickening technologies
- Anaerobic digestion
- Biogas production and energy recovery
- Biosolids management
- Circular economy opportunities
- **Case Study:** Biogas generation from municipal sludge reducing plant energy costs.

**Module 6: Smart Wastewater Management and Digital Technologies**

- SCADA systems
- IoT-enabled wastewater monitoring
- AI-based predictive maintenance
- Digital twins for wastewater treatment

- Smart asset management
- **Case Study:** AI-powered predictive maintenance reducing equipment downtime in a treatment facility.

**Module 7: Water Reuse and Sustainable Wastewater Solutions**

- Water reclamation technologies
- Industrial water recycling
- Greywater reuse systems
- Climate resilience strategies
- Net Zero water initiatives
- **Case Study:** Industrial water reuse program reducing freshwater consumption by over 60%.

**Module 8: Plant Design, Operation, Optimization, and Risk Management**

- WWTP design fundamentals
- Hydraulic and process calculations
- Operational troubleshooting
- Risk assessment and emergency response
- Performance optimization and benchmarking
- **Case Study:** Optimization of a municipal wastewater treatment plant through process automation and energy-efficient upgrades.

## 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