



Consulting and Training | Reach New Heights

Course Name

Water Distribution Network Operation, Inspection & Maintenance

Sector Name

Mechanical Engineering

Document Type

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Water Distribution Network Operation, Inspection & Maintenance

Course Introduction

Water Distribution Systems should be planned, designed, constructed, operated, and maintained to deliver an adequate supply of water in a safe, cost-effective, and reliable manner. An adequate water supply is required to maintain the health and economic viability of a community. In addition, an adequate supply of water is one of the primary requirements for fire suppression. This course is intended for those who require a better understanding of water distribution systems planning, design, and inspection.

This will be achieved by a better understanding of water distribution systems and their auxiliaries and accessories related to the system. You will be expected to complete a water distribution system planning and design under instructor guidance by using first principle methods and/or design aids. This course is designed to prepare water system staff to operate safely and cost-effectively and maintain water systems. Also, to provide them with knowledge, skills, abilities, and judgment in critical areas of the water distribution system, including storage, pumping, valves, pipelines, and other accessories related to the system.

This course will focus on training the Engineers on practical aspects of planning, design, then inspection of the water system to enable

other staff to operate and maintain the system with emphasis on safe practices, procedures, and troubleshooting.

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Target Audience

- ✓ Automotive Engineer
- ✓ Boiler Engineer
- ✓ Ceramics Engineer
- ✓ Equipment Engineer
- ✓ High-Pressure Engineer
- ✓ Marine Engineer
- ✓ Mechanical Design Engineer
- ✓ Mechanical Engineer
- ✓ Naval Architect
- ✓ Pipeline Engineer
- ✓ Power Engineer
- ✓ Rotating Equipment Engineer
- ✓ Senior Mechanical Engineer
- ✓ Turbine Engineer
- ✓ Validation Engineer

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Learning Objectives

- ✓ Understanding the Fundamentals of Water Distribution Systems
- ✓ Design of New Water Distribution Systems
- ✓ Analyze existing Systems and be able to find out existing problems
- ✓ Understanding Operation, Inspection, Maintenance & Repair of Water Networks

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Course Outline

✓ **01 DAY ONE**

Module (01) Introduction

- ✓ Basic Concepts
- ✓ Water Distribution System Layout
- ✓ Population Estimation

Module (02) Revision, Of Hydraulics Engineering (Part I)

- ✓ Pressure
- ✓ Hydrostatic Pressure
- ✓ Pressure Head
- ✓ Measurement of Pressure
- ✓ Flow Rate
- ✓ Continuity of Flow
- ✓ Conservation of Energy
- ✓ Flow in Pipes under Pressure
- ✓ Hazen-Williams Equation
- ✓ Hazen-Williams Nomo Graph

Water Distribution Network Operation, Inspection & Maintenance

Course Outline

✓ 02 DAY TWO

Module (02) Revision, Of Hydraulics Engineering (Part II)

- ✓ Flow Measurement
- ✓ Gravity Flow in Pipes
- ✓ Manning's Formula
- ✓ Partial Flow in Pipes
- ✓ Open Channel Flow Measurement
- ✓ Non-uniform Open Channel Flow
- ✓ Specific Energy
- ✓ Critical Flow Gradually
- ✓ Gradually varied Flow
- ✓ Rapidly varied Flow

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Course Outline

✓ **03 DAY THREE**

Module (03) Water Distribution Systems

- ✓ Design Factors
- ✓ Required Flows and Pressures
- ✓ Per Capita Demand
- ✓ Variations in Water Demand
- ✓ Fire Flows
- ✓ Pressures
- ✓ Pipeline Layout
- ✓ Water Mains
- ✓ Materials
- ✓ Installation
- ✓ Pump Design
- ✓ Centrifugal Pumps
- ✓ Pump Characteristics
- ✓ Pump Head Curve
- ✓ System Characteristics
- ✓ System Head Curve
- ✓ Pump Operating Point
- ✓ Parallel Operation



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Course Outline

✓ **04 DAY FOUR**

Module (04) Distribution System

- ✓ Types of Distribution Reservoirs
- ✓ Flow in Pipe Networks
- ✓ Pipes in Series
- ✓ Pipes in Parallel
- ✓ Pipe Network Analysis
- ✓ Hydraulics of Water Wells

Module (05) Pressure Piping Systems And Water Quality Analysis

- ✓ Water use and availability
- ✓ Pressure Systems
- ✓ Energy Loss
- ✓ Energy Gains- Pumps
- ✓ Control Valves
- ✓ Pipe Network
- ✓ Network Analysis
- ✓ Water Quality Analysis



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Course Outline

✓ **05 DAY FIVE**

Module (06) Maintenance Of Distribution Network System

- ✓ Construction site inspections of work by other utilities
- ✓ Pipeline facility repair
- ✓ Line patrols
- ✓ Sluice valve operation
- ✓ Pipeline appurtenance inspection
- ✓ Public notification
- ✓ Pipe flushing

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Confirmed Sessions

FROM	TO	DURATION	FEES	LOCATION
Sept. 21, 2026	Sept. 25, 2026	5 days	5950.00 \$	switzerland , Geneva
March 14, 2027	March 18, 2027	5 days	4250.00 \$	KSA , Riyadh
July 5, 2027	July 9, 2027	5 days	4250.00 \$	UAE , Dubai
Dec. 7, 2026	Dec. 11, 2026	5 days	4250.00 \$	UAE , Abu Dhabi

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