

WATER DISTRIBUTION OPERATIONS, STACKABLE CERTIFICATES OF SPECIALIZATION



Water & Wastewater Fundamentals

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Water Distribution System Operations-1
 - Identify sources and characteristics of water common to water distribution systems.
- Water Distribution System Operations-4
 - Using calculations and conversions, determine water flow, pressure, volume, velocity and force, and chemical dosage used in water distribution systems.
- Water Distribution System Operations-10
 - Specify necessary procedures needed to safely complete field work in a water distribution system.

Certificate Requirements

Code	Title	Units
CWS-100	Career Pathways in Water & Wastewater	3
CWS-101	Fundamentals of Water & Wastewater	3
CWS-102	Calculations in Water & Wastewater	3
CWS-107	Safety in Water & Wastewater	3
Total Units		12

Water Distribution Operations

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Water Distribution System Operations-3
 - Identify drinking water public health hazards and water quality standards common to the industry.
- Water Distribution System Operations-4
 - Using calculations and conversions, determine water flow, pressure, volume, velocity and force, and chemical dosage used in water distribution systems.
- Water Distribution System Operations-6
 - Explain principles of pump operation for the types of pumps used in water distribution systems including common problems, necessary adjustments, and typical packing gland problems.

Certificate Requirements

Code	Title	Units
CWS-106	Electrical & Instrumentation Processes	3
CWS-130	Water Distribution Systems	3

CWS-134	Pumps, Motors & Valves	3
Total Units		9

Advanced Water Distribution Operations Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Water Distribution System Operations-5
 - Identify and compare methods used to handle, install and repair water distribution pipe.
- Water Distribution System Operations-7
 - Explain the electrical principles involved in control circuits common to water distribution systems.
- Water Distribution System Operations-8
 - Explain the required safe handling and storage of chlorine used in water distribution systems.
- Water Distribution System Operations-11
 - Compare and contrast factors considered in the selection of pipe and different types of water meters.

Certificate Requirements

Code	Title	Units
CWS-110	Laboratory Analysis for Water & Wastewater	3
CWS-204	Applied Hydraulics	3
CWS-230	Advanced Water Distribution Systems	3
Total Units		9

Certificates of Specialization

Students who complete the requirements above qualify for a certificate in that area of emphasis. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.