

# WATER DISTRIBUTION OPERATIONS ASSOCIATE IN SCIENCE AND CERTIFICATE OF ACHIEVEMENT



Students in this major learn the methods, processes, technology, and current practices involved in operating and maintaining modern, complex water distribution systems. Students who satisfactorily complete the required courses for this certificate and/or degree program will qualify to take the CDPH Grade D-1 through D-5 Water Distribution Operator examinations required to obtain certification and employment with a water district.

## Program Learning Outcomes

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

- Identify sources and characteristics of water common to water distribution systems.
- Compare and contrast the different types of water distribution systems currently used in the United States.
- Identify drinking water public health hazards and water quality standards common to the industry.
- Using calculations and conversions, determine water flow, pressure, volume, velocity and force, and chemical dosage used in water distribution systems.
- Identify and compare methods used to handle, install and repair water distribution pipe.
- 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.
- Explain the electrical principles involved in control circuits common to water distribution systems.
- Explain the required safe handling and storage of chlorine used in water distribution systems.
- Check and utilize water maps and drawings to determine location, type and characteristics of water distribution systems.
- Specify necessary procedures needed to safely complete field work in a water distribution system.
- Compare and contrast factors considered in the selection of pipe and different types of water meters.
- Demonstrate the ability to read meters and calculate the meter accuracy.

## Associate in Science Degree 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-106	Electrical & Instrumentation Processes	3
CWS-107	Safety in Water & Wastewater	3
CWS-110	Laboratory Analysis for Water & Wastewater	3
CWS-130	Water Distribution Systems	3
CWS-134	Pumps, Motors & Valves	3
CWS-204	Applied Hydraulics	3
CWS-230	Advanced Water Distribution Systems	3
Select at least six units from the following:		6-7
CWS-103	Water Resources Management	
CWS-105	Water Conservation	
CWS-112	Water Treatment Plant Operations	
CWS-115	Wastewater Reclamation and Reuse	
CWS-132	Wastewater Collection Systems	
CWS-206	Advanced Electrical & Instrumentation Processes	
CWS-207	Practical Skills in Water & Wastewater Systems	
CWS-210	Advanced Laboratory Analysis for Water & Wastewater	
CWS-212	Advanced Water Treatment Plant Operations	
CWS-232	Advanced Wastewater Collection Systems	
CWS-270	Public Works Supervision	
CWS-280	Backflow Tester Training	
CWS-282	Cross-Connection Control Specialist	
CWS-284	Cross-Connection Control Specialist-Recycled Water	
CWS-290	Cooperative Work Experience	
<b>Total Units</b>		<b>36-37</b>

Plus General Education Requirements (<https://catalog.gcccd.edu/cuyamaca/degree-requirements-transfer-information/>)

## Certificate of Achievement

Students who complete only the major requirements above qualify for a Certificate in Water Distribution Operations. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.