

# WATER TREATMENT PLANT OPERATIONS ASSOCIATE IN SCIENCE AND CERTIFICATE OF ACHIEVEMENT



Students enrolled in this major learn the key steps, processes, and current technology involved in operating modern water treatment plants. Students who satisfactorily complete the required courses in this certificate and/or degree program will qualify to take the California Department of Public Health (CDPH) Grade T-1 and T-2 Water Treatment Plant Operator examinations required for certification and employment at water treatment plants.

## Program Learning Outcomes

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

- Identify in detail characteristics and sources of ground water and surface water supplies including the chemical, physical and bacterial characteristics, and explain the effects on quality of geological formations, stratifications, and watershed management.
- Compare the basic principles of each water treatment process and list them in order performed.
- Identify and classify water distribution system components.
- Explain pump cavitation, corrosion, cross-connection, air valves, head loss and main flushing in relation to water and wastewater collection, distribution, and treatment.
- Compare and contrast the basic principles of each water treatment process and list them in order performed.
- Explain and prepare a plan for the use of chlorine including the characteristics of and methods for storing, feeding and measuring chlorine including the effects of moisture, pH and temperature on feed rate, and the health and safety effects, procedures and personal protective requirements.
- Determine the methods used for coagulation, flocculation and sedimentation including common chemicals used, feed systems, effects of time temperature, turbidity and pH, and the measurement of turbidity and color.
- Compare and contrast the six basic water quality parameters and explain in detail microbiological and chemical components, including sampling requirements and properties.
- Demonstrate through testing basic knowledge of the regulations for monitoring water quality and performing water treatment.
- Perform basic mathematical calculations and conversions relating to water flow, pressure, volume, velocity, chemical dosage, and hydraulic and organic loading.
- Determine appropriate safety procedures applicable to service and operation of water treatment and distribution systems including potential problems.

## 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-112	Water Treatment Plant Operations	3
CWS-134	Pumps, Motors & Valves	3
CWS-204	Applied Hydraulics	3
CWS-212	Advanced Water Treatment Plant Operations	3
Select at least six units from the following:		6-7
CWS-103	Water Resources Management	
CWS-105	Water Conservation	
CWS-114	Wastewater Treatment Plant Operations	
CWS-115	Wastewater Reclamation and Reuse	
CWS-130	Water Distribution Systems	
CWS-206	Advanced Electrical & Instrumentation Processes	
CWS-207	Practical Skills in Water & Wastewater Systems	
CWS-210	Advanced Laboratory Analysis for Water & Wastewater	
CWS-214	Advanced Wastewater Treatment Plant Operations	
CWS-230	Advanced Water Distribution Systems	
CWS-268	Membrane Plant Operation	
CWS-270	Public Works Supervision	
CWS-280	Backflow Tester Training	
CWS-282	Cross-Connection Control Specialist	
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 Treatment Plant Operations. An official request must be filed with the Admissions and Records Office prior to the deadline as stated in the Academic Calendar.