

# WASTEWATER TREATMENT OPERATIONS, STACKABLE CERTIFICATES OF SPECIALIZATION



## Water & Wastewater Fundamentals

### Program Learning Outcomes

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

- Wastewater Treatment Operator-1
  - 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.
- Wastewater Treatment Operator-7
  - Perform basic mathematical calculations and conversions relating to water flow, pressure, volume, velocity, chemical dosage, and hydraulic and organic loading.
- Wastewater Treatment Operator-8
  - Recognize and comment on safety procedures applicable to service and operation of wastewater collection and treatment systems, including potential problems.

### 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
<b>Total Units</b>		<b>12</b>

## Wastewater Treatment Operations

### Program Learning Outcomes

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

- Wastewater Treatment Operator-2
  - Identify the characteristics and sources of municipal sewage.
- Wastewater Treatment Operator-4
  - Describe the basic principles of conventional wastewater treatment.
- Wastewater Treatment Operator-8
  - Recognize and comment on safety procedures applicable to service and operation of wastewater collection and treatment systems, including potential problems.

### Certificate Requirements

Code	Title	Units
CWS-106	Electrical & Instrumentation Processes	3
CWS-110	Laboratory Analysis for Water & Wastewater	3
CWS-114	Wastewater Treatment Plant Operations	3
<b>Total Units</b>		<b>9</b>

## Advanced Wastewater Treatment Operations

### Program Learning Outcomes

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

- Wastewater Treatment Operator-7
  - Perform basic mathematical calculations and conversions relating to water flow, pressure, volume, velocity, chemical dosage, and hydraulic and organic loading.
- Wastewater Treatment Operator-3
  - Describe the specifications, installation, and operation of typical devices used in backflow prevention and testing and explain their proper installation.
- Wastewater Treatment Operator-6
  - Explain the basic principles of preliminary, primary, secondary and tertiary treatment.
- Wastewater Treatment Operator-5
  - Compare and contrast wastewater treatment unit processes including preliminary, primary, secondary and tertiary treatment.

### Certificate Requirements

Code	Title	Units
CWS-134	Pumps, Motors & Valves	3
CWS-204	Applied Hydraulics	3
CWS-214	Advanced Wastewater Treatment Plant Operations	3
<b>Total Units</b>		<b>9</b>

## 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.