

Wastewater Technology Education (WWT)

Contact Occupational & Noncredit Programs for further information.
(760) 744-1150, ext. 2284
Office: AA-138

Associate in Arts Degrees -

AA Degree requirements are listed in Section 6 (green pages).
• Wastewater Technology Education

Certificates of Achievement -

Certificate of Achievement requirements are listed in Section 6 (green pages).
• Wastewater Technology Education

PROGRAM OF STUDY

Wastewater Technology Education

Specifically designed for individuals employed by or seeking employment in water districts in San Diego County.

A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
WWT 100 Treatment Plant Operations	3
WWT/WTE 110 Waterworks Mathematics	3
WWT/WTE 120 Instrumentation and Controls	3
WWT/WTE/ PWM 125 Supervision	3
WWT 150 Collection Systems Operator	3
WWT 155 Treatment Process Control	3
WWT/WTE 215 Motors/Pumps/Oper/Maintenance	3
Electives (Select 6 units)	
WWT/WTE 135 Backflow Prevention	3
WWT/WTE 138 Cross Connection Specialist	3
WWT 197 Wastewater Tech Education Topics	.5-4
WWT/WTE 225 San Diego Regional Internship	4-8
CE 100* Cooperative Education	3-4
TOTAL UNITS	27

*Cooperative Education must be related to this major.

COURSE OFFERINGS

Courses numbered under 100 are not intended for transfer credit.

WWT 100 Treatment Plant Operations (3)

3 hours lecture

Note: May be taken 4 times

An introductory wastewater treatment plant operations course. Topics covered include: the various origins and characteristics of wastewater; an overview of wastewater collections systems; preliminary treatment; primary treatment; fixed film secondary biological treatment processes; treatment ponds and disinfection. Emphasis is given to the role of the operator and preparation for solving practical problems and problems typical of those found in Operator Certification examinations.

WWT 110 Waterworks Mathematics (3)

3 hours lecture

Note: Cross listed as WTE 110; may be taken 4 times

Provides instruction in entry-level to intermediate-level mathematical calculations used in the operation and evaluation of conventional water/wastewater treatment processes and water distribution systems. The course content has been developed to meet requirements for entry to water/wastewater education program courses. Course will cover basic geometry, metric conversions, flows, pressure, and chemical dosage as it relates to the water/wastewater industry. Material will parallel some of the problems found on State Certification examinations.

WWT 120 Instrumentation and Controls (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 110

Note: Cross listed as WTE 120; may be taken 4 times

Introduction to basic electrical theory. Applications and uses of water and wastewater control systems including switches, relays, alarms, motors, instrumentation and telemetering.

WWT 125 Supervision (3)

3 hours lecture

Note: Cross listed as WTE 125/PWM 125

Managerial aspects of public utilities including organization, decision making, coordination, communication, and public relations. Personnel management including recruiting, training, evaluation, discipline, promotion, morale, and grievances. Safety programs and encouraging safe conditions, actions and attitudes.

WWT 135 Backflow Prevention (3)

2½ hours lecture-1½ hours laboratory

Note: Cross listed as WTE 135; may be taken 4 times

Concentrated training in recognition and abatement of cross connections in water supply and plumbing systems. Hands on backflow prevention device testing procedures for certification.

WWT 138 Cross Connection Specialist (3)

3 hours lecture

Recommended preparation: WTE/WWT 135

Note: Cross listed as WTE 138

The study of the various levels of administrative and technical procedures necessary to operate a cross connection control program. Students will obtain the knowledge to become certified as a "Cross Connection Control Specialist" under the provisions set forth by American Water Works Association.

WWT 150 Collection Systems Operator (3)

3 hours lecture

Note: May be taken 4 times

Wastewater collection systems and collection system equipment, pipeline cleaning and maintenance, system design, safety procedures, inspecting and testing procedures used in collections systems.

WWT 155 Treatment Process Control (3)

3 hours lecture

Recommended preparation: WWT/WTE 110

A wastewater treatment and disposal course with an emphasis on control of these processes. Topics covered include: the activated sludge secondary treatment process and its variations; sludge digestion, treatment and disposal; safety and housekeeping; maintenance and an overview of effluent disposal, tertiary treatment and reclamation. Emphasis is also given to the role of the operator and provides preparation for solving process control calculations and problems typical of those found in Operator Certification examinations.

WWT 197 Wastewater Technology Education Topics (.5 - 4)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

Note: May be taken 4 times

Topics in Wastewater Technology Education. See Class Schedule for specific topic offered. Course title will designate subject covered.

WWT 215 Motors and Pumps, Operation and Maintenance (3)

3 hours lecture

Recommended preparation: WTE/WWT 110

Note: Cross listed as WTE 215; may be taken 4 times

Identification of problems encountered, causes of problems, corrective solutions, and repairs in the operation of pumps and motors. Implementation of maintenance programs including scheduling and recordkeeping.

WWT 225 San Diego Regional Internship (4)

12 hours laboratory

Note: Cross listed as WTE 225; Pass/No Pass grading only; may be taken 2 times

This class will provide students with the opportunity to gain work experience in

San Diego County water and wastewater agencies through a formal internship. The one-year internship will provide experience in four primary areas: system operations, system maintenance, wastewater treatment and water treatment. Students must apply to the program and be accepted by a regional interview committee comprised of representatives from San Diego County water and wastewater agencies, Cuyamaca and Palomar Colleges and the San Diego County Water Authority.

Water Technology Education (WTE)

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A.A. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
WTE 100	Waterworks Distribution	3
WTE 105	Water Treatment Plant Operation I	3
WTE/WWT 110	Waterworks Mathematics	3
WTE/WWT 120	Instrumentation and Controls	3
WTE/WWT/		
PWM 125	Supervision	3
WTE 150	Water Quality Monitoring	3
WTE/WWT 215	Motors/Pumps/Oper/Maintenance	3
Electives (Select 9 units)		
WTE/WWT 135	Backflow Prevention	3
WTE/WWT 138	Cross Connection Specialist	3
WTE 197	Water Technology Education Topics	.5-4
WTE 205	Waterworks Distribution II	3
WTE 210	Water Treatment Plant Operation II	3
WTE/WWT 225	San Diego Regional Internship	4-8
CE 100*	Cooperative Education	3,4
TOTAL UNITS		30

* Cooperative Education must be related to this major.

COURSE OFFERINGS

Courses numbered under 100 are not intended for transfer credit.

WTE 100 Waterworks Distribution (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 110

Note: May be taken 4 times

Water utility system operations and maintenance. An introduction to the principles of pressure pipe systems and the hydraulics involved in their operation. Design, installation, operation, and maintenance of basic elements of water systems including pipes, pumps, valves, meters, and related hydraulic units. Operations and maintenance safety considerations emphasized. This course prepares students for the State of California - Water Distribution Operator Grade I, Grade II, and Grade III exams.

WTE 105 Water Treatment Plant Operation I (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 110

Note: May be taken 4 times

Provides an introduction to water treatment plant operations in accordance with the Safe Drinking Water Act (SDWA). Special emphasis is given to implementation of the Surface Water Treatment Rule through USEPA approved filtration technology. Subject matter includes major provisions of the SDWA and its amendments; basic water chemistry; source water assessment; conventional treatment processes; treated water stability; waterborne diseases; public health protection; and an introduction to math skills equivalent to those required of State of California Grade II water treatment plant operators. This class is helpful to those preparing for the Grade I and Grade II state examination.

WTE 110 Waterworks Mathematics (3)

3 hours lecture

Note: Cross listed as WWT 110; may be taken 4 times

Provides instruction in entry-level to intermediate-level mathematical calculations used in the operation and evaluation of conventional water/wastewater treatment processes and water distribution systems. The course content has been developed to meet requirements for entry to water/wastewater education program courses. Course will cover basic geometry, metric conversions, flows, pressure, and chemical dosage as it relates to the water/wastewater industry. Material will parallel some of the problems found on State Certification examinations.

WTE 120 Instrumentation and Controls (3)

3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 110

Note: Cross listed as WWT 120; may be taken 4 times

Introduction to basic electrical theory. Applications and uses of water and wastewater control systems including switches, relays, alarms, motors, instrumentation and telemetering.

WTE 125 Supervision (3)

3 hours lecture

Note: Cross listed as WWT 125/PWM 125

Managerial aspects of public utilities including organization, decision making, coordination, communication, and public relations. Personnel management including recruiting, training, evaluation, discipline, promotion, morale, and grievances. Safety programs and encouraging safe conditions, actions and attitudes.

WTE 135 Backflow Prevention (3)

2½ hours lecture-1½ hours laboratory

Note: Cross listed as WWT 135; may be taken 4 times

Concentrated training in recognition and abatement of cross connections in water supply and plumbing systems. Hands on backflow prevention device testing procedures for certification.

WTE 138 Cross Connection Specialist (3)

3 hours lecture

Recommended preparation: WTE/WWT 135

Note: Cross listed as WWT 138

The study of the various levels of administrative and technical procedures necessary to operate a cross connection control program. Students will obtain the knowledge to become certified as a "Cross Connection Control Specialist" under the provisions set forth by American Water Works Association.

WTE 150 Water Quality Monitoring (3)

2½ hours lecture-1½ hours laboratory

Recommended preparation: WTE /WWT 110

Prepares students to properly monitor public drinking water quality through study of: Federal and State regulations, laboratory analyses, types of contaminants, sample collection techniques and interpretation of monitoring data.

WTE 197 Water Technology Education Topics (.5 - 4)

Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture, laboratory, or lecture/laboratory may be scheduled by the department. Refer to Class Schedule.

Note: May be taken 4 times

Topics in Water Technology Education. See Class Schedule for specific topic offered. Course title will designate subject covered.