

UP 96 Decorator Accessories (1.5)
 1 hour lecture - 1½ hours laboratory
 Skills and techniques necessary for creation of a variety of decorator accessories: upholstered headboards; designer cushions; custom pillows; lampshades; duvet covers, bedspreads and dust ruffles; table runners and covers; and simple slip-covers. Includes design and fabric/materials selection, industry standards, cost estimating/pricing and other business considerations. Students will complete individual projects.

UP 97 Upholstery Topics (.5 - 4)
 Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture or laboratory may be scheduled by the department. Refer to Class Schedule.
 Topics in upholstery. See Class Schedule for specific topic offered. Course title will designate subject covered.

Wastewater Technology Education (WWT)

Contact Occupational & Noncredit Programs for further information.
 (760) 744-1150, ext. 2284
 Office: AA-135

Associate in Science Degrees -
 AS 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

Provide comprehensive education to a diverse constituency for a career in the water and wastewater field that prepares students to contribute effectively in a profession responsible for protecting public health.

A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements	Units
WWT/WTE 50 Waterworks Mathematics	3
WWT 52 Treatment Plant Operations	3
WWT 54 Collection Systems Operator	3
WWT/WTE 56 Instrumentation and Controls	3
WWT/PWM/ WTE 60 Supervision	3
WWT 64 Treatment Process Control	3
WWT/WTE 66 Motors and Pumps, Operation and Maintenance	3
Electives (Select 6 units)	
WWT/WTE 58 Backflow Prevention	3
WWT/WTE 62 Cross Connection Specialist	3
WWT 97 Wastewater Technology Education Topics	0.5 - 4
* 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 50 Waterworks Mathematics (3)
 3 hours lecture

Note: Cross listed as WTE 50
 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 52 Treatment Plant Operations (3)
 3 hours lecture

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 54 Collection Systems Operator (3)
 3 hours lecture

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

WWT 56 Instrumentation and Controls (3)
 3 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 50
Note: Cross listed as WTE 56

Introduction to basic electrical theory, applications, common uses, and real world examples of control systems and instrumentation used in water distribution, water and wastewater treatment plants; including switches, relays, alarms, motors, instrumentation, valve actuators, computers, and communication.

WWT 58 Backflow Prevention (3)
 2½ hours lecture - 1½ hours laboratory

Note: Cross listed as WTE 58
 Provides intensive training focused on the field testing procedure for backflow prevention devices and training in the recognition and abatement of cross connections in water and plumbing systems. Students will acquire the knowledge, skills, and abilities required to test as a certified backflow tester.

WWT 60 Supervision (3)
 3 hours lecture

Note: Cross listed as PWM/WTE 60
 Supervisory aspects of public agencies including organization, decision making, coordination, communication, and public relations. Personnel supervision including coaching, training, evaluation, discipline, team building, morale, and grievances. Safety programs and encouraging safe conditions, actions and attitudes.

WWT 62 Cross Connection Specialist (3)
 3 hours lecture

Recommended preparation: WTE/WWT 58
Note: Cross listed as WTE 62

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 the American Water Works Association.

WWT 64 Treatment Process Control (3)
 3 hours lecture
Recommended preparation: WWT/WTE 50
 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 66 Motors and Pumps, Operation and Maintenance (3)
 3 hours lecture
Recommended preparation: WTE/WWT 50
Note: Cross listed as WTE 66
 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 97 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 and/or laboratory may be scheduled by the department. Refer to Class Schedule.
 Topics in Wastewater Technology Education. See Class Schedule for specific topic offered. Course title will designate subject covered.

Water Technology Education (WTE)

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PROGRAM OF STUDY

Water Technology Education

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A.S. DEGREE MAJOR OR CERTIFICATE OF ACHIEVEMENT

Program Requirements		Units
WTE/WWT 50	Waterworks Mathematics	3
WTE 52	Waterworks Distribution	3
WTE 54	Water Treatment Plant Operation I	3
WTE/WWT 56	Instrumentation and Controls	3
WTE/ PWM/ WWT 60	Supervision	3
WTE 64	Water Quality Monitoring	3
WTE/WWT 66	Motors and Pumps, Operation and Maintenance	3

Electives (Select 9 units)		
WTE/WWT 58	Backflow Prevention	3
WTE/WWT 62	Cross Connection Specialist	3
WTE 72	Waterworks Distribution II	3
WTE 74	Water Treatment Plant Operation II	3
WTE 97	Water Technology Education Topics	0.5 - 4
* 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 50 Waterworks Mathematics (3)
 3 hours lecture
Note: Cross listed as WWT 50
 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 52 Waterworks Distribution (3)
 3 hours lecture
Prerequisite: A minimum grade of 'C' in WTE/WWT 50
 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 54 Water Treatment Plant Operation I (3)
 3 hours lecture
Prerequisite: A minimum grade of 'C' in WTE/WWT 50
 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; disinfection; 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 56 Instrumentation and Controls (3)
 3 hours lecture
Prerequisite: A minimum grade of 'C' in WTE/WWT 50
Note: Cross listed as WWT 56
 Introduction to basic electrical theory, applications, common uses, and real world examples of control systems and instrumentation used in water distribution, water and wastewater treatment plants; including switches, relays, alarms, motors, instrumentation, valve actuators, computers, and communication.

WTE 58 Backflow Prevention (3)
 2½ hours lecture - 1½ hours laboratory
Note: Cross listed as WWT 58
 Provides intensive training focused on the field testing procedure for backflow prevention devices and training in the recognition and abatement of cross connections in water and plumbing systems. Students will acquire the knowledge, skills, and abilities required to test as a certified backflow tester.