

CAREERS PATHWAYS: SOUTHERN CALIFORNIA WATER PROGRAMS

The Water and Wastewater Technology programs provide pre-employment training as well as advanced courses in Water and Wastewater Technology for those wishing to become certified for a career as a water or wastewater operator. The arid climate of Southern California provides many opportunities for professionals to work at water and wastewater facilities. Some of the most advanced facilities in the world are located in Southern California.

The community colleges also offer cooperative work experience and internship opportunities supporting and reinforcing on-the-job training in business and industrial under supervision of a college instructor and facilitated by the use of learning objectives. The students work in a skilled or professional level assignment in their area of vocational interest and will meet performance objectives related to the instruction.



Bakersfield College

1801 Panorama Dr,
Bakersfield, CA 93305

WTRT B51 Basic Water Treatment **3.0 units | 54 hours lecture**

Description: Prepares the beginning level student for the lower level California Department of Health Services (CA/DHS) Water Treatment Operator Certification (grades 1 and 2). The course also informs the interested public in the science and technology involved in the purification of drinking water. (Possible field trips required.) Transferable: Not transferable. Not degree applicable.

WTRT B52 Basic Water Distribution **3.0 units | 54 hours lecture**

Description: Prepares the beginning level student for the lower level California-Nevada Section of the American Water Works Association CA/NV AWWA (grade 1) and/or California Department of Health Services CA/DHS (grades 1 and 2) Water Distribution Operator Certification. The course also informs the interested public in the science and technology involved in the purification of drinking water. Field trips may be required. Transferable: Not transferable. Not degree applicable.

WTRT B53 Water and Wastewater Analysis **3.0 units | 54 hours lecture**

Recommended: BC placement into reading level 06, and high school chemistry or job-related experience. Description: Prepares the student to take California SWRCB, grades 1 and 2, Waste Water Operation exam. Covers environmental influences, composition of natural water, analysis, interpretation of results and application to treatment problems. Transferable: Not transferable. Not degree applicable.

WTRT B61 Advanced Water Treatment **3.0 units | 54 hours lecture**

Prerequisites: Successful completion of Basic H2O treatment or comparable course.

Description: Prepares the advanced level student for upper level California Department of Health Services (CA/DHS) Water Treatment Operator Certification (grades 3 through 5). The course also informs the interested public in the science and technology involved in the purification of drinking water. Field trips required. Transferable: Not transferable. Not degree applicable.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Bakersfield College (Continued)

WTRT B62 Advanced Water Distribution 3.0 units | 54 hours lecture

Prerequisites: Must have completed a basic water distribution course acceptable to Bakersfield College or the instructor, with a minimum of 36 hours.

Description: Prepares the advanced level student for upper level CA/NV AWWA (grades 2 through 4) and/or CA/DHS (grades 3 through 5) Water Distribution Operator Certification. The course also informs the interested public in the science and technology involved in the distribution of drinking water. Transferable: Not transferable. Not degree applicable.

College of the Canyons

26455 Rockwell Canyon Road
Santa Clarita, CA 91355

Water Systems Technology is the study of water treatment, water distribution, and wastewater processes. The program is designed to prepare students for a career in the water industry and to assist those already employed.

Associate of Science Degree in Water Systems Technology can emphasize in Wastewater

Certificate of Achievement in Water Systems Technology can emphasize in Wastewater

WATER-120 Introduction to Water Systems Technology 3.0 units | 54 hours lecture

Explores the entire Water Systems Technology program, which includes the class and degree offerings. Reviews the State Water Resources Control Board Division of Drinking Water operator certification requirements. Various topics include water supply, water quality, drinking water treatment and distribution, wastewater and recycled water and other related topics.



WATER-130 Waterworks Mathematics 3.0 units | 54 hours lecture

Introduces basic mathematical principles related to drinking water distribution and treatment systems and wastewater treatment plants; including areas, volumes, pressure, flow rates, unit conversion, chemical dosage, detention time, and filtration rates. Focuses on mathematical computations within the expected range of knowledge on the State Water Resources Control Board exams for Drinking Water Distribution 1 and 2, Drinking Water Treatment 1 and 2, and Wastewater Treatment 1 and 2.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

College of the Canyons (Continued)

WATER-131 Advanced Waterworks Mathematics **3.0 units | 54 hours lecture**

Prerequisite: WATER-130

Examines advanced study of mathematical principles related to pump hydraulics: horsepower, flow rates, pump curves, chemical dosages, detention time, filtration and backwash rates, CT calculations and various utility management analyses related to budget preparations, water rate structures, and demand design forecasting. Focuses on mathematical computations within the expected range of knowledge on the State of California Water Resources Control Board exams for Drinking Water Distribution 3, 4, and 5, Drinking Water Treatment 3 and 4, and Wastewater Treatment 3 and 4.

WATER-132 Water Supply **3.0 units | 54 hours lecture**

Recommended Preparation: WATER-120

Examines the sources of drinking water supplies, with special emphasis on water in California. Explores the uses of water, including residential, commercial/industrial/institutional, and landscaping demands. It also examines the roles and methods of conservation on water demand management.

WATER-135 Water Quality **3.0 units | 54 hours lecture**

Examines basic principles of chemistry and microbiology, and applies them to drinking water quality and related state and federal regulations.

WATER-140 Water Distribution Operator I **3.0 units | 54 hours lecture**

Recommended Preparation: WATER-130

Introduces basic concepts and processes of drinking water distribution systems, including a general background of drinking water sources, regulations, water system design, and various distribution system appurtenances. Assists in the preparation of the State of California Water Resources Control Board Certification Exams for Grades I and II. Filed trips may be required.

WATER-141 Water Distribution Operator II **3.0 units | 54 hours lecture**

Recommended Preparation: WATER-140 or four years of employment in a water treatment plant, water distribution system or hold a valid Grade I license.

Presents intermediate to advanced principles of water distribution. Assists in preparation for Grade III & IV Water Distribution Operator's Certificate examination given by the State of California Water Resources Control Board. Filed trips may be required.

WATER-150 Water Treatment Plant Operation Processes I **3.0 units | 54 hours lecture**

Recommended Preparation: WATER-130 & WATER-135

Presents the basic operating principles and techniques of the conventional surface water treatment processes of coagulation, flocculation, sedimentation, and filtration, plus those of disinfection processes. Assists in preparation for Grade T1 and T2 Water Treatment Plant Operator's Certificate examination given by the State of California Water Resources Control Board. Filed trips may be required.

WATER-151 Water Treatment Plant Operation Processes II **3.0 units | 54 hours lecture**

Recommended Preparation: WATER-131 and 150

Examines advanced topics in conventional surface water treatment processes and disinfection, as well as non-conventional treatment processes. Assists in preparation for Grade T3 and T4 Water Treatment Plant Operator's Certificate examination given by the State of California Water Resources Control Board. Filed trips may be required.

WATER-160 Wastewater Treatment and Disposal I **3.0 units | 54 hours lecture**

Presents the basic operating principles and techniques of conventional wastewater treatment processes including preliminary treatment, primary treatment, and secondary treatment, as well as wastewater quality assessment, wastewater collection, and wastewater disposal. Assists in preparation for Grade 1/2 Wastewater Treatment Plant Operator Certificate examination given by the State of California Water Resources Control Board. Field trips may be required.

WATER-161 Wastewater Treatment and Disposal II **3.0 units | 54 hours lecture**

Recommended Preparation: WATER-160

Examines advanced topics in conventional wastewater treatment processes including alternative secondary treatment methods, tertiary treatment, disinfection and dechlorination, solids handling, water recycling, and industrial waste management. Assists in preparation for Grade 2 Wastewater Treatment Plant Operator Certificate examination given by the State of California Water Resources Control Board. Field trips may be required.



Citrus College

1000 W. Foothill Blvd.
Glendora, CA 91741

The Water Technology Certificate of Achievement and A.S. Degree is designed to prepare students who wish to seek entry level employment in the public water supply industry or qualify for a more responsible position within the field. These courses will be helpful to students who wish to prepare for Treatment Operator Certification, T-1 through T-5, and Distribution Operator Certification, D-1 through D-5



WATR 150 Introduction to Water Systems **3.0 units | 54 hours lecture**

Strongly recommended: ENGL 101.

A basic course in water distribution and treatment covering water quality control practices, water sources, public health aspects of water regulations, supply, water treatment arithmetic, chemical treatment, filtration, corrosion, disinfection, tastes and odors in water, water system operation and maintenance, valves, pipes, pumps, and meters. The material covered in this course will be helpful to those preparing for the California State Water Resources Control Board (SWRCB) D-1 and D-2 Water Distribution Operator's Certificate examinations and the T-1 and T-2 Water Treatment Operator's Certificate examination.

WATR 151 Water Resources and Distribution I **3.0 units | 54 hours lecture**

Strongly recommended: WATR 150; MATH 144.

A course designed for water distribution systems operators. Topics include: water production, types of reservoirs, water lines, pumps, water chemistry, water treatment, arithmetic, chemical treatment, appurtenances, method of installation, repair of facilities, back up theory, and administrative functions behind the distribution system. This course prepares the student for the D2 and D3 Water Distribution Operator's examinations administered by the State Water Resources Control Board.

WATR 153 Water Resources and Distribution II **3.0 units | 54 hours lecture**

Strongly recommended: WATR 150 and WATR 151; MATH 144.

A course in practical water supply with emphasis on the basic principles of hydraulics. The course will focus on clarifying pressure, head, buoyancy, friction loss, forces, velocity of flow and the size capacity relationship of distribution systems. The study of pump characteristics, sizing of pumps, water chemistry, water treatment, arithmetic, chemical treatment, and efficiency test procedures are included. Typical calculations include line loss in series and parallel pipe systems, residual pressure, forces on thrust blocks, and horsepower requirements for pumps. This course prepares students for the State Water Resources Control Board D4 and D5 Water Distribution Operator's certification.

WATR 156 Water Treatment I **3.0 units | 54 hours lecture**

Strongly recommended: WATR 150; MATH 144.

Course covering water resources, water quality, unit operations of water treatment, public health requirements, and the basics of water chemistry and aquatic microbiology. Prepares students for the T1, T2, and T3 Water Treatment Operator's Certificate examinations given by the California State Water Resources Control Board.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Citrus College (Continued)

WATR 157 Water Treatment II **3.0 units | 54 hours lecture**

Strongly recommended: WATR 156; MATH 144.
A course covering water resources, water quality, unit operations of advanced water treatment systems, public health, water chemistry and microbiology, and fluoridation. Prepares students for T3, T4, and T5 Water Treatment Operator's Certificate examinations required by the California State Water Resources Control Board.

WATR 162 Water Use Efficiency I **3.0 units | 54 hours lecture**

This class provides an overview and technical information on the role of the water efficiency coordinator or similar position in the public or private sector. Topics include: water supply and cycle, structure and operations of utilities, regulatory agencies, best management practices, water conservation programs and technologies. This class will prepare the student for the American Water Works Association (AWWA) grade 1 Water Use Efficiency Practitioner Certification.

WATR 164 Water Use Efficiency II **3.0 units | 54 hours lecture**

Prerequisite(s): WATR 162 or Grade 1 Water Use Efficiency Practitioner Certification or consent from the department based upon sufficient experience in the water industry. This course covers the implementation and monitoring of water use efficiency programs utilized by water conservation coordinators in the public and private sectors. Topic areas include: California Water Code and current conditions and legislation impacting the State's water supplies, measuring the cost-benefit of conservation programs, monitor water saving results, development and implementation of water shortage measures and strategic plans, review of water rates structures to encourage conservation, review of non-potable water supplies, and use of new technologies to reduce overall water demand in the urban sector. This class will prepare students for the California/Nevada American Water Works Association (AWWA) Grade 2 Water Use Efficiency Practitioner Certification exam.

Cuyamaca College

900 Rancho San Diego Parkway
El Cajon, CA 92019

Cuyamaca College's Wastewater Treatment Plant Operator's Program is administered by the Water and Wastewater Technology Program. Cuyamaca's innovative Center for Water Studies Program provides pre-employment training as well as advanced courses in water and wastewater technology for those wishing career advancement. We are adding "hands-on learning opportunities" to many of our courses, and adding new advanced courses in many disciplines.

Courses prepare students for certification examinations administered by the State of California as well as those administered by professional associations within the water and wastewater industry.

CWS 101 Fundamentals of Water & Wastewater Technology **3.0 units | 54 hours lecture**

This course provides a broad overview of the water and wastewater fields and issues confronting the industry. Students will learn how source waters are obtained, treated, and distributed and how wastewater is collected, transported, and disposed of in the area. Contemporary issues facing the water and wastewater industry will be explored.

CWS 102 Calculations in Water & Wastewater Technology **3.0 units | 54 hours lecture**

Recommended Preparation: Grade of "Pass" in MATH 090 or equivalent Study of the mathematical principles and methods involved in solving problems related to water and wastewater treatment, distribution, and collection systems, including volume, flow rate, velocity, pressure, force, unit conversions, dimensional analysis, chemical dose rates, dilutions, filter loading and backwash rates as related to water/wastewater technology.



Cuyamaca College (Continued)

CWS 103 Introduction to Water Resources Management **3.0 units | 54 hours lecture**

With the ever increasing demands for safe and reliable supplies of potable water, combined with decreasing supplies and over commitments of our existing water resources, we are facing a serious water crisis in the western United States. This course explores the history and development of California water resources, legal and financial issues, water portfolio diversification, the role of groundwater recharge and management, wastewater reclamation and reuse, desalination, and energy conservation.

CWS 104 Applied Hydraulics **3.0 units | 54 hours lecture**

Recommended Preparation: "C" grade or higher or "Pass" in CWS 102 or equivalent
Study of the hydraulic principles involved in the operation of water and wastewater distribution and collection systems. The behavior of water in closed-conduit pressure systems and open channel delivery systems and the types of pumps used in water/wastewater service and their operational characteristics will be explored.

CWS 105 Principles and Practices of Water Conservation **3.0 units | 54 hours lecture**

This course provides theoretical and practical training in applied water use efficiency and a foundation in the need for and major components of comprehensive water conservation programs. Topics include residential, commercial, and landscape customers; water uses; budgets; demand management; water audits; Best Management Practices; rate structures; and program design and management.

CWS 106 Introduction to Electrical and Instrumentation Processes **3.0 units | 54 hours lecture**

An introductory course in basic electronic, electrical, and control system principles. Electrical safety precautions, component identification, schematic interpretation, motors, transformers, relays and test equipment will be studied. Automated process control devices and an overview of current technologies will be discussed.

CWS 110 Laboratory Analysis for Water & Wastewater **3.0 units | 54 hours lecture**

Examines basic fundamentals of laboratory analysis with an emphasis on applied chemical and microbiological procedures for water and wastewater plant operators. Includes procedures and techniques used in physical, chemical, bacteriological and biological examination of water/wastewater.

CWS 112 Basic Plant Operations, Water Treatment **3.0 units | 54 hours lecture**

Recommended Preparation: "C" grade or higher or "Pass" in CWS 102 or equivalent
Study of the sources of water and the public health aspects of water supply; chemical, physical and bacteriological standards of water quality; types of water treatment plants; and water treatment procedures, operation, maintenance, storage and distribution.

CWS 114 Basic Plant Operations, Wastewater Treatment **3.0 units | 54 hours lecture**

An introduction to the basic principles involved in the operation of conventional public wastewater treatment plants. Provides information on plant hydraulics, preliminary, primary and secondary treatment processes, disinfection, as well as environmental and safety regulation compliance.

CWS 115 Wastewater Reclamation and Reuse **3.0 units | 54 hours lecture**

This course covers the fundamentals of wastewater reclamation and reuse. Topics include the history of wastewater treatment and reclamation; total resource recovery including bio-solids/biogas harvesting; planning, design, and construction of reclamation plants; and reclaimed wastewater distribution. Problems regarding regulations, marketing, and public perception of using reclaimed wastewater will be discussed, along with public safety issues.

CWS 117 Advanced Plant Operations, Water Treatment **3.0 units | 54 hours lecture**

Prerequisite: "C" grade or higher or "Pass" in CWS 112 or equivalent
The study of water quality control and treatment. Aspects of public health as it relates to the water supply will be highlighted. Sources of contamination and methods of control will be emphasized as well as maintenance of water treatment facilities, safety, cost, and environmental factors.

CWS 120 Advanced Plant Operations, Wastewater Treatment **3.0 units | 54 hours lecture**

Prerequisite: "C" grade or higher or "Pass" in CWS 114 or equivalent
This course examines how modern wastewater treatment plants are operated to maximize efficiency and reliability in processing municipal wastewater. Emphasis on wastewater treatment plant facilities, equipment, preventative maintenance procedures, plant process monitoring and control, and safety/regulatory compliance.



Cuyamaca College (Continued)

CWS 130 Water Distribution Systems **3.0 units | 54 hours lecture**

Recommended Preparation: "C" grade or higher or "Pass" in CWS 102 or equivalent

Study of the operation and maintenance of a water supply and distribution system. Water sources, water quality, treatment methods, distribution operations, customer metering, pipeline installation and repair, valves and appurtenances, storage tanks, and maintenance topics will be discussed. Includes mathematical and hydraulic formulas and principles to determine volume, flow, pressure and force. Part of a series required for eligibility to take the California Department of Public Health (CDPH) Water Distribution Operator certification examinations; supports certification examinations for CDPH Water Distribution Operator grade D1 and D2.

CWS 132 Wastewater Collection Systems **3.0 units | 54 hours lecture**

Study of the components of wastewater collection systems. Overview of design installation, operation, monitoring, maintenance and repair of sewer pipelines, pump stations and related facilities.

CWS 134 Mechanical Maintenance **3.0 units | 54 hours lecture**

Overview of the basic principles of mechanical equipment design, installation, operation, maintenance, repair, overhaul and replacement. Emphasis on understanding the value of preventative maintenance techniques such as equipment monitoring, lubrication analysis, machine alignment and scheduled overhaul.

CWS 265 Water Distribution Systems II **3.0 units | 54 hours lecture**

Prerequisite: "C" grade or higher or "Pass" in CWS 130 or equivalent

The second of an integrated sequence of courses covering water distribution systems. Students will gain a more comprehensive understanding of the operation and maintenance of a water supply and distribution system including advanced calculations, management, safety, and emergency response issues. Contemporary issues facing the water and wastewater industry will be explored in depth. Expands on topics covered in the introductory course, WWTR 130. Part of a series required for eligibility to take the California Department of Public Health (CDPH) Water Distribution Operator certification examinations; prepares students to take and pass CDPH Water Distribution Operator certification examinations for grades D3, D4 and D5.

CWS 267 Wastewater Collection Systems II **3.0 units | 54 hours lecture**

Prerequisite: "C" grade or higher or "Pass" in CWS 132 or equivalent

Provides an in-depth understanding of the operation and maintenance of wastewater collection systems. Includes the design, operation, monitoring, maintenance and repair of collection systems and pump stations; equipment maintenance; safety and survival systems; and administration and organizational principles.

CWS 268 Introduction to Membrane Plant Operation **3.0 units | 54 hours lecture**

Prerequisite: "C" grade or higher or "Pass" in CWS 112 or 114 or equivalent

Study of basic membrane technology and the application of this technology to water and wastewater treatment. This course explores the operation and maintenance of membrane components within a water and wastewater treatment system, as well as pre and post treatment.

CWS 270 Public Works Supervision **3.0 units | 54 hours lecture**

Prerequisite: "C" grade or higher or "Pass" in CWS 101 or equivalent

Introduction to the principles and practices of modern supervision and management with an emphasis on contemporary issues facing supervisors and managers in the water utilities industry.

CWS 280 Backflow Tester Training **2.0 units | 27 hours lecture, 27 hours lab**

Preparation for the American Water Works Association (AWWA) and the American Backflow Prevention Association (ABPA) certification for Backflow Prevention Assembly Tester Certification. Includes backflow device installation and testing procedures required for the certification testing.

CWS 282 Cross Connection Control Specialist **3.0 units | 54 hours lecture**

Study of the administrative and technical procedures required for a cross connection program, including system inspections, hazard evaluation, identification of cross connection problems and backflow prevention devices, shut-down tests, and reclaimed water systems.



Cuyamaca College (Continued)

CWS 284 Cross Connection Control Specialist, Recycled Water

3.0 units | 54 hours lecture

Study of the administrative and technical procedures concerning the production, use and distribution of recycled water including backflow protection, legal, administrative and permitting issues, the treatment process, health and safety aspects, and the cross connection control (shut down) test as conducted in San Diego County. Various aspects of cross connection control recycled water shut down testing will be demonstrated.

Imperial Valley College

380 East Aten Road
Imperial, CA 92251

Water Technology is a career oriented vocational program involving the study of water/wastewater theory and principles. Professionalism, workplace skills and responsibilities are stressed along with safety and an awareness of hazardous materials control. The Water Treatment Systems Technology degree and certificates are designed to provide students with the comprehensive understanding and manipulative skills, technical knowledge, and related trade information required to become State-certified operators in Water Treatment and Water Distribution. This program will allow students to comply with the necessary requirements for certification up to Grade III level.

WT 105 Computational Procedures Operator I

3.0 units | 54 hours lecture

This course is designed to give water and wastewater treatment operators a general knowledge of basic mathematics as applied to treatment plant operations. This course includes calculation of treatment plant problems, fractions, decimals, percentages, ratios, proportions, averages, areas, volumes, metric system conversions, and estimation.



WT 110 Water Treatment Plant Operator I

4.0 units | 72 hours lecture

This course will provide information needed to operate a basic freshwater treatment plant as efficiently as possible. Course will consist of water sources and treatment, coagulation and flocculation, sedimentation, filtration, disinfection, corrosion control, taste and odor control, laboratory procedures, and plant operation math.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Imperial College (Continued)

WT 130 Wastewater Treatment Operator I **4.0 units | 72 hours lecture**

This course is designed to train operators in the effective operation and goals of the wastewater treatment process. The course will consist of the fundamentals of water cycle, wastewater treatment daily operations, sources and pretreatment of domestic and industrial wastes, interpretation of laboratory results, and process control.

WT 140 Water Distribution Systems **4.0 units | 72 hours lecture**

This course is designed to provide operators with the necessary skills required for the proper installation, inspection, operation, maintenance, repair, and management of water distribution systems. Among the topics covered are: distribution system mathematics, system hydraulics, system design, water mains and valve installation, fire hydrants, water services and meters, backflow and cross-connection control, pumps and motors, occupational safety, utility management, and federal regulations.

WT 150 Wastewater Collection Systems **4.0 units | 72 hours lecture**

This course covers proper installation, inspection, operation, maintenance, and repair of wastewater collection systems. It provides the knowledge and skills to effectively operate and maintain collection systems. It also provides knowledge as to why collection systems affect treatment facilities and how they have a significant impact on the operation and maintenance costs and effectiveness of these systems.

WT 205 Computational Procedures Operator II **3.0 units | 54 hours lecture**

Prerequisite: WT 105 with a grade of "C" or better. This course provides instruction in entry-level to advanced-level mathematical calculations used in the operation and evaluation of conventional water/wastewater treatment processes and water distribution systems. 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.

WT 210 Water Treatment Plant Operator II **4.0 units | 72 hours lecture**

Prerequisite: WT 110 and WT 205 with a grade of "C" or better. This course is designed to give water plant operators a comprehensive understanding of freshwater treatment plant safety, iron and manganese control, fluoridation, softening, demineralization, handling, disposal of process wastes, instrumentation, maintenance, groundwater plant operations, advanced math, rules and regulations, laboratory procedures, and supervisory practices.

WT 230 Wastewater Treatment Operator II **4.0 units | 72 hours lecture**

Prerequisite: WT 130 with a grade of "C" or better. This course covers wastewater treatment operations related to maintenance, plant safety, sampling procedures, laboratory procedures, hydraulics systems, process control, activated sludge plants, sludge digestion, solids handling, solving operational problems, record keeping and report writing.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Los Angeles Trade-Technical College

400 West Washington Boulevard
Los Angeles, CA 90015

The Water Systems Technology program at LATTC offers students a choice of two concentrations within water systems industry.

WASTEWATER OPTION offers courses focusing on preliminary, primary, secondary, and tertiary treatment systems as well as disinfection methods, solids treatment, and solids and effluent disposal practices.

SUPPLY WATER OPTION offers courses focused on the operation and design of water systems, wells, pumps and meters; water treatment for potable water; and technical phases of automatic controls, including power and code considerations



WATER 001 Water Distribution I **3.0 units | 54 hours lecture**

This course provides instructions to water works design and operation for operators and others involved in the operation and design of water distribution systems. All major components of the distribution system including wells, storage reservoirs, pumps, water mains, valves, meters and fire hydrants are fully discussed.

WATER 002 Water Distribution II **3.0 units | 54 hours lecture**

This is an advanced course in water distribution systems. Included are special considerations of pipe types and uses, reservoirs, maps, records applied hydraulics as applied to Distribution Systems. Emphasis will be placed on the practical layout, operation and maintenance of a water distribution system. Students are prepared for a Grade 2 Distribution Operation Certification of the AWWA.

WATER 004 Water Purification I (Potable Water) **3.0 units | 54 hours lecture**

This beginning course in water treatment covers regulations related to water treatment and water quality control, basics of water treatment plant processes and inter-relationship of processes, and introduction to operation and maintenance of water treatment plant. One of the objectives of the course is to prepare students for Grade 1 and Grade 2 Water Treatment Operator Certification by the Department Of Public Health (CDPH).

WATER 005 Water Treatment II (Potable Water) **3.0 units | 54 hours lecture**

This is a more detailed and more in-depth course (compared to the beginning course) in water treatment. this course covers public health, water quality control, elements and functions of the water treatment plant processes. It covers in detail the water treatment plant performance in relation to Surface Water Treatment Rule. Also, covers the operation and maintenance of water treatment plant. One of the objectives of the course is to prepare students for Grades 3 and 4 Water Treatment Operator Certification by the State Department of Public Health (CDPH).

WATER 101 Introduction to Supply Water Technology **3.0 units | 54 hours lecture**

The purpose of this course is to introduce the basics of water supply, sources of water supply, water chemistry, drinking water regulations, water microbiology, water quality control, and some basic arithmetic related to water distribution and water treatment problems.

WATER 001 Water Distribution I **3.0 units | 54 hours lecture**

This course provides instructions to water works design and operation for operators and others involved in the operation and design of water distribution systems. All major components of the distribution system including wells, storage reservoirs, pumps, water mains, valves, meters and fire hydrants are fully discussed.



THE METROPOLITAN WATER DISTRICT
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Los Angeles Trade-Technical College (Continued)

WATER 002 Water Distribution II **3.0 units | 54 hours lecture**

This is an advanced course in water distribution systems. Included are special considerations of pipe types and uses, reservoirs, maps, records applied hydraulics as applied to Distribution Systems. Emphasis will be placed on the practical layout, operation and maintenance of a water distribution system. Students are prepared for a Grade 2 Distribution Operation Certification of the AWWA.

WATER 004 Water Purification I (Potable Water) **3.0 units | 54 hours lecture**

This beginning course in water treatment covers regulations related to water treatment and water quality control, basics of water treatment plant processes and inter-relationship of processes, and introduction to operation and maintenance of water treatment plant. One of the objectives of the course is to prepare students for Grade 1 and Grade 2 Water Treatment Operator Certification by the Department Of Public Health (CDPH).

WATER 005 Water Treatment II (Potable Water) **3.0 units | 54 hours lecture**

This is a more detailed and more in-depth course (compared to the beginning course) in water treatment. this course covers public health, water quality control, elements and functions of the water treatment plant processes. It covers in detail the water treatment plant performance in relation to Surface Water Treatment Rule. Also, covers the operation and maintenance of water treatment plant. One of the objectives of the course is to prepare students for Grades 3 and 4 Water Treatment Operator Certification by the State Department of Public Health (CDPH).

WATER 101 Introduction to Supply Water Technology **3.0 units | 54 hours lecture**

The purpose of this course is to introduce the basics of water supply, sources of water supply, water chemistry, drinking water regulations, water microbiology, water quality control, and some basic arithmetic related to water distribution and water treatment problems.

WATER 102 Calculations and Measurement for Water Technology Programs **3.0 units | 54 hours lecture**

This course covers the basic math skills needed to perform in the supply & waste water fields. Emphasis is placed on the basic operations and how they are applied to the industry. Measurement calculations will be performed in both standard and metric measurements.

WASTE 012 Wastewater Operations I **3.0 units | 54 hours lecture**

This course is a survey and introductory course into wastewater systems for operations and maintenance personnel. Administrative, engineering and laboratory personnel may benefit from this course.

WASTE 013 Wastewater Operations II **3.0 units | 54 hours lecture**

A comprehensive study is made of preliminary, primary, and secondary treatment systems and operations including selected field studies.

WASTE 014 Wastewater Operations III **3.0 units | 54 hours lecture**

This is a comprehensive study of disinfection methods, tertiary treatment, water reclamation, solids treatment, solids and effluent disposal practices.

WASTE 016 Wastewater Operations V **3.0 units | 54 hours lecture**

This course is a comprehensive study of the practical application of engineering fundamentals, such as hydraulics, mechanics, electricity and instruments as practiced in wastewater treatment.

WASTE 017 Wastewater Operations VI **3.0 units | 54 hours lecture**

Public health, the environment, regulations, management/supervision and report writing as practiced in wastewater and water reclamation plants safety are covered. Student Learning Outcome(s): 1. Be able to describe pre-treatment, collection system, public treatment system, and disposal system in a wastewater system. 2. Be able to discuss energy levels for various treatment methods, the costs involved, and social impacts of the effects on energy and natural resources. 3. Be able to describe the different levels of operator certification including the educational and experience requirements. 4. Be able to discuss public relations and professional organizations. 5. Be able to describe oral and written forms of communications, and the importance of record keeping. 6. Be able to discuss the administrative methods, human relations, Cal-OSHA, and labor relations in plant management. 7. Be able to describe how to fill out job applications, what to do in job interviews and discuss personnel practices.



Los Angeles Trade-Technical College (Continued)

WASTE 018 Water and Wastewater Mathematics **3.0 units | 54 hours lecture**

This is a review and practice of basic mathematical concepts required to solve wastewater treatment problems. (Note: this is not a remedial math class). Student Learning Outcome(s):

1. Be able to discuss basic mathematics concepts such as fractions, decimals, exponents, percentages, averages, ratios, proportions, and unit conversions.

Mt. San Jacinto College **San Jacinto Campus**

1499 N. State St.
San Jacinto, CA 92583

Water Technology is a career oriented non-transfer vocational program offering courses leading to a certificate and/or an Associate degree. The Water Technology program at MSJC emphasizes a real-world approach to diagnostic skill building and a thorough understanding of system theory and operations. Professionalism, workplace skills and responsibilities are stressed along with safety and an awareness of hazardous materials control. Graduates are primarily employed by cities, counties, federal agencies and industry that operate and maintain water treatment, water distribution, wastewater collection and/or wastewater treatment systems.

WATR-090 Basic Waterworks Mathematics **2.0 units | 36 hours lecture**

This course is an introduction to the mathematics used in water and wastewater industries. Students will learn the basic formulas and functions needed to calculate area, volume, instantaneous flow, chemical dosage and other related problems. The course is intended to prepare the student for further water and wastewater courses.

WATR-100 Introduction to Water & Wastewater Operations **1.0 unit | 18 hours lecture**

This course introduces water and wastewater operations and the basic skills and knowledge needed to advance in this industry. The course will provide an overview of water and wastewater treatment processes, distribution systems as well as terminology and equipment used in the wastewater and water industries. Regulations, licensing and the certification process will be discussed as a part of this course.



WATR-103 Water Treatment Plant Operations I & II **3.0 units | 54 hours lecture**

This course will cover sources of water, the water treatment process, water treatment plant operations, safety, water quality regulations, and waterworks mathematics. The course will prepare students for Water Treatment Plant Operator I or II (T-1 or T-2) licenses for the State of California.

WATR-105 Water Treatment Plant Operations III, IV & V **3.0 units | 54 hours lecture**

Prerequisite: WATR-103 (with a grade of C or better)

The course covers sources of water, the water treatment process, water treatment plant operations, safety, water quality regulations and waterworks math. This course is designed for individuals seeking employment or already employed in the water industry. It covers the Water Treatment Plant Operator's job-related knowledge identified by the State Water Resources Control Board examination developers as essential for minimally competent Water Treatment Plant Operator III, IV or V (T-3, T-4, or T-5).



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Mt. San Jacinto College (Continued)

WATR-107 Water Distribution I & II **3.0 units | 54 hours lecture**

The course covers the sources of water, principles of design, installation, operation and maintenance of pipes, pumps, valves, meters, and other related hydraulic units. Operation and maintenance safety considerations are emphasized. The course is designed to prepare the student to take the State of California Water Distribution Operator exam.

WATR-109 Water Distribution III, IV & V **3.0 units | 54 hours lecture**

Prerequisite: WATR-107 (with a grade of C or better)

This is a comprehensive course that teaches the students the advanced principles of the operation and maintenance of a water distribution system. The course covers the sources of water, principles of design, installation, operation and maintenance of pipes, pumps, valves, meters, and other related hydraulic units.

WATR-120 Wastewater Treatment Plant Operations I & II **3.0 units | 54 hours lecture**

This course is an introduction to wastewater treatment. Students will explore the scope, limits, and methods of wastewater treatment processes through readings, discussions, analysis, and laboratory study. This course is designed for individuals seeking employment or already employed in the wastewater field. It covers the wastewater operator's job-related knowledge identified by the CSWRB examination developers as essential for a minimally competent Grade I or Grade II Wastewater Treatment Plant Operator.

WATR-122 Wastewater Plant Operations III, IV & V **3.0 units | 54 hours lecture**

Prerequisite: WATR-120 (with a grade of C or better)

This course explores the scope, limits, and methods of secondary and advanced treatment, solids handling, disinfection, and the reclamation of wastewater, through readings, discussions, analysis, and laboratory study. This course is designed for individuals seeking employment or already employed in the wastewater field. It covers the wastewater operator's job-related knowledge identified by the California State Water Resources Control Board examination developers as essential for a minimally competent Wastewater Treatment Plant Operator Grade III or above.

WATR-125 Test Procedures for Water and Wastewater **3.0 units | 54 hours lecture**

This course prepares students to analyze and interpret test data relating to water/wastewater treatment plants. Topics include: Basic chemistry and related mathematical analyses involved in the operation of water/wastewater treatment plants; tests necessary to maintain process control of wastewater treatment plants as well as monitoring of industrial wastes prior to disposal; and proper methods for collecting and handling samples.

WATR-130 Environmental Laws and Regulations **3.0 units | 54 hours lecture**

This course provides an overview of federal, state, and local laws pertaining to environmental protection and pollution prevention relating to water quality, air quality, solid waste, and cross media contamination.

WATR-140 Wells, Pumps and Motors **3.0 units | 54 hours lecture**

This course will provide students with a basic knowledge of domestic water wells, water booster pumps, pump theory, electric motor theory and design. Water well design regulations and abandonment will be discussed as well as maintenance procedures in the field and in the shop. The class will cover the various types of pumps used in the water industry and discuss the various uses and maintenance issues for each style of pump.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Palomar College

1140 West Mission Avenue
San Marcos, CA 92069

The Water and Wastewater Technology programs at Palomar College provide pre-employment training as well as advanced courses in Water and Wastewater Technology for those wishing to become certified for a career as a water or wastewater operator.

WWT 50 Calculations in Water & Wastewater Technology **3.0 units | 54 hours lecture**

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 Basic Plant Operations, Wastewater Treatment **3.0 units | 54 hours lecture**

Prerequisite: A minimum grade of 'C' in WTE/WWT 50
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 Wastewater Collection Systems: 3.0 units | 54 hours lecture

Prerequisite: A minimum grade of 'C' in WTE/WWT 50
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 Intro to Electrical and Instrumentation Processes **3.0 units | 54 hours lecture**

Prerequisite: A minimum grade of 'C' in WTE/WWT 50
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 Tester Training **3.0 units | 54 hours lecture**

Provides intensive training focused on the field testing procedures and diagnostics 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 Public Works Management **3.0 units | 54 hours lecture**

Administration, management, and 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 **3.0 units | 54 hours lecture**

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.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Palomar College (Continued)

WWT 64 Advanced Plant Operations, Wastewater Treatment **3.0 units | 54 hours lecture**

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, Pumps, and Hydraulics **3.0 units | 54 hours lecture**

Prerequisite: A minimum grade of 'C' in WTE/WWT 50
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 **0.5 – 4.0 units**

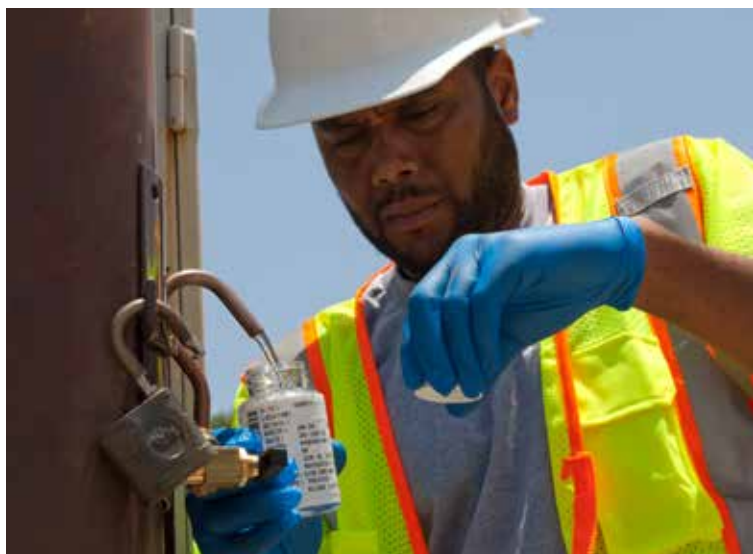
Units awarded in topics courses are dependent upon the number of hours required of the student. Any combination of lecture and/or laboratory may be scheduled by the department. Refer to Class Schedule. Topics in Wastewater Technology Education. See Class Schedule for specific topic offered. Course title will designate subject covered.



San Bernardino Valley College

701 South Mount Vernon Avenue
San Bernardino, CA 92410

The Water Supply Technology Program is designed to serve students who are employed or interested in employment in water/wastewater occupations. The program provides technical classes in water distribution, water treatment, wastewater collection, and wastewater treatment. The courses prepare students to upgrade their skills and/or prepare them for certification examinations from the California State Water Resource Control Board, the American Water Works Association, and the California Water Environment Association. The certificate program is designed to prepare students for entry level jobs in water treatment, water distribution, and wastewater reclamation industries.



Credit Courses

WST 031 Water Use Efficiency Practitioner I **3.0 units | 54 hours lecture**

This introductory water conservation course is designed for students interested in working as a water use efficiency practitioner. It includes the expected range of knowledge required for the American Water Works Association (AWWA) Water Use Efficiency Practitioner I Certificate.

WST 032 Water Use Efficiency Practitioner II **3.0 units | 54 hours lecture**

Prerequisite: WST 031

This is an intermediate water conservation course designed for students interested in working as a Water Use Efficiency Practitioner. It includes the expected range of knowledge required for the American Water Works Association (AWWA) Water Use Efficiency Practitioner 2 Certification.

WST 034 Introduction to Water Resource Management **3.0 units | 54 hours lecture**

This course explores the history and development of California water resources. In addition, the course covers the impact of environmental and economic water usage as well as water quality, water pollution and water resource regulations affecting our public drinking water. The basics of watershed management, water supply availability, ground and surface water hydrology as well as alternative sources of water such as the use of water conservation methods will be covered.

WST 036 Water Utility Management **3.0 units | 54 hours lecture**

Prerequisite: WST 092 or WST 062 or WST 072

This course is designed for students interested in managing water and/or wastewater utilities. Topics will include personnel management, organizational management, financial management, training, problem-solving/decision-making, regulatory compliance, health and safety programs, community relations, personal and professional skills.

WST 045 Backflow Prevention Devices **3.0 units | 45 hours lecture, 27 hours lab**

This course provides instruction in theory, testing, and maintenance of backflow prevention assemblies. It prepares journeyman plumbers and utility operators to take the American Water Work Association Backflow Prevention Certification test.

WST 048 Cross-Connection Control **3.0 units | 54 hours lecture**

Prerequisite/Co-requisite: WST 045

This course is a study of the administrative and technical procedures required to establish a cross-connection control program, including a review of applicable local, state and federal regulations. The course includes the identification and study of backflow devices required to mitigate hazards of actual or potential connections between a potable water supply and any source of contamination. It also prepares students to become certified as cross-connection control program specialists.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

San Bernardino Valley College (Continued)

WST 052 Water Technology Math **3.0 units | 54 hours lecture**

This vocational math course is recommended for students who are currently enrolled in water technology course(s). The course includes application of math to solve problems commonly encountered in water technology.

WST 053 Wastewater Technology Math **3.0 units | 54 hours lecture**

This vocational math course is recommended for students who are currently enrolled in wastewater treatment course(s). The course includes math required to solve problems commonly encountered in the primary, secondary, and tertiary treatment of wastewater.

WST 061 Water Distribution I **3.0 units | 54 hours lecture**

This introductory course is designed for students interested in the field of water distribution. It covers the configuration, operation and maintenance of a water distribution system, and includes the Expected Range of Knowledge (ERK) required for the State Water Resource Control Board (SWRCB) water distribution certification tests at D1 and D2 levels. Successful completion of this course fulfills the requirements for specialized training covering fundamentals of water supply principles required to apply for the SWRCB D2 certification test.

WST 062 Water Distribution II **3.0 units | 54 hours lecture**

Prerequisite: WST 061

This intermediate level course prepares students for apprentice or journey person positions in the field of water distribution. The course covers the Expected Range of Knowledge (ERK) required to pass California State Water Resources Control Board (SWRCB) water distribution examination at D3 level. Successful completion of this course fulfills the requirements for specialized training covering the fundamentals of water supply principles required to apply for SWRCB D3 examination.

WST 063 Water Distribution III **3.0 units | 54 hours lecture**

Prerequisite: WST 062

This advanced level course prepares students for work in a highly skilled or supervisory position in the operation of a water distribution system. It includes the Expected Range of Knowledge (ERK) required for the California State Water Resources Control Board (SWRCB) water distribution exam at D4 and D5 levels. Successful completion of this course fulfills the requirements for specialized training covering

fundamentals of water supply principles required to apply for SWRCB D4 examination.

WST 071 Water Treatment I **3.0 units | 54 hours lecture**

This introductory course is designed for students interested in the field of water treatment. It includes processes required to treat source water into potable water and includes the Expected Range of Knowledge (ERK) required to pass the California State Water Resource Control Board (SWRCB) water treatment certification test at T1 level. Successful completion of this course fulfills the requirements for the specialized training covering drinking water treatment required to apply for SWRCB T2 certification test.

WST 072 Water Treatment II **3.0 units | 54 hours lecture**

Prerequisite: WST 071

This intermediate level course prepares students for apprenticeship or entry-level position in the field of water treatment. The course covers the Expected Range of Knowledge (ERK) required to pass the California State Water Resources Board (SWRCB) treatment examination at T2 level. Successful completion of this course fulfills the specialized training, covering fundamentals of water supply principles, required to apply for the California Water Resources Control Board (SWRCB) T3 and D3 examination.

WST 073 Water Treatment III **3.0 units | 54 hours lecture**

Prerequisite: WST 072

This advanced level course prepares students for journeyman level plant operator in the field of water treatment. The course covers the Expected Range of Knowledge (ERK) required to pass the State Water Resources Control Board (SWRCB) water treatment examination at T3 and T4 level. Successful completion of this course fulfills the requirements for specialized training covering fundamentals of water supply principles required to apply for SWRCB T4 and D4 examinations.

WST 075 Water & Wastewater Chemistry and Analysis **3.0 units | 54 hours lecture**

Prerequisite/Co-requisite: WST 071 or WST 091

This course introduces students to the physical and chemical properties of substances commonly used in the treatment of water/wastewater and the role of laboratory analysis in the treatment processes. The course includes procedures and techniques used by plant operators in physical, chemical, and bacteriological examination of water/wastewater.



San Bernardino Valley College (Continued)

WST 081 Wastewater Collection I **3.0 units | 54 hours lecture**

This course is designed to train operators in the practical aspects of operating and maintaining wastewater collector systems, emphasizing safe practices and procedures. The course focuses on the knowledge, skills, and abilities required to perform the essential duties of an entry-level collection system maintenance technologist and prepares students to take the California Water Environment Association (CWEA) Collection System Certification exam at the Grade I level.

WST 082 Wastewater Collection II **3.0 units | 54 hours lecture**

Prerequisite: WST 081

This course is designed to provide an in-depth understanding of the operation and maintenance of wastewater collector systems. The course focuses on the knowledge, skills, and abilities required to perform the essential duties of a skilled or journey level collection system maintenance technologist and prepares students to take the California Water Environment Association (CWEA) Collection System Certification exam at Grade II.

Non-Credit Courses

WST 601 Test Review for Water Distribution D1 **9 hours lecture**

This noncredit course is designed to familiarize students with the expected Range of Knowledge (ROK) required to pass the State Water Resources Control Board (SWRCB) Distribution Operator test at level D1. The review topics include distribution system operations, disinfection, related mathematics and safety. The course may also be used to earn continuing education units required to renew the certificate.

Not Associate Degree Applicable.

WST 602 Test Review for Water Distribution D2 **9 hours lecture**

This noncredit course is designed to familiarize students with the expected Range of Knowledge (ROK) required to pass the State Water Resources Control Board (SWRCB) Distribution Operator test at level D2. The review topics include distribution system operations, disinfection, related mathematics and safety. The course may also be used to earn continuing education units required to renew the certificate.

Not Associate Degree Applicable.

WST 091 Wastewater Treatment I **3.0 units | 54 hours lecture**

This is an introductory course in wastewater treatment. The course covers material included in the State Water Resources Control Board (SWRCB) grade I certification exam.

WST 092 Wastewater Treatment II **3.0 units | 54 hours lecture**

Prerequisite: WST 091

This is a second course in a series on wastewater treatment. It includes material usually found in the State Water Resources Control Board (SWRCB) Grade II Certificate exam.

WST 093 Wastewater Treatment III **3.0 units | 54 hours lecture**

Prerequisite: WST 092

This is the third course in a series on wastewater treatment. It includes material usually found in the State Water Resources Control Board (SWRCB) grade III certificate examination.

WST 603 Test Review for Water Distribution Operations D3 **9 hours lecture**

This noncredit course is a review of the expected Range of Knowledge (ROK) required to obtain the State Water Resources Control Board (SWRCB) Distribution Operator certification at the Distribution Operator III level. The review topics include distribution system operations, disinfection, related mathematics, and safety.

Not Associate Degree Applicable.

WST 611 Test Review for Water Treatment T1 **8 hours lecture**

This course is a review of the expected Range of Knowledge (ROK) required to obtain the California State Water Resources Control Board (SWRCB) Water Treatment Operator License at level T1. The review topics include conventional treatment techniques, flocculation, sedimentation, filtration, system pressures, and related math.

Not Associate Degree Applicable.



San Bernardino Valley College (Continued)

WST 612 Test Review for Water Treatment T2 8 hours lecture

This noncredit course is a review of the expected Range of Knowledge (ROK) required to obtain the State Water Resources Control Board (SWRCB) Water Treatment Operator II certification. The review topics include conventional treatment techniques, source water supply and storage, water quality regulation and related math.
Not Associate Degree Applicable.

WST 625 Test Review for Wastewater Treatment Plant Operations Grades 1 & 2: 8 hours lecture

This noncredit course is a review of the expected knowledge for a minimally competent Wastewater Treatment Plant Operator as determined by State Water Resources Control Board (SWRCB) treatment operator certification at the Grades I and II level. The review topics include wastewater treatment operations, disinfection, related mathematics, and safety.
Not Associate Degree Applicable.

WST 626 Test Review for Wastewater Treatment Plant Operations Grades 3, 4 & 5: 8 hours lecture

This noncredit course is a review of the expected knowledge for a minimally competent Wastewater Treatment Plant Operator as determined by State Water Resources Control Board (SWRCB) treatment operator certification at the Grades III, IV and V level. The review topics include wastewater treatment operations, administration, process control, regulations, disinfection, related mathematics, and safety.
Not Associate Degree Applicable.

WST 629 Introduction to Water Supply Technology 8 hours lecture

This noncredit course introduces students to entry-level training in water conservation, treatment, supply, delivery, and waste collection systems. The goal of this course is to offer students better-defined opportunities for career selection in the field of water technology. Regulations licensing and the certification process will be discussed as a part of this course.
Not Associate Degree Applicable.

WST 652 Basic Waterworks Math Test Preparation 8 hours lecture

This noncredit course prepares students for the quantitative and algebraic questions typically encountered on water distribution and water treatment operations licensing examinations. This course is also recommended for students currently enrolled in water technology course(s) who desire refresher training in the applied math skills that are unique to water operations. Topics include, but are not limited to, unit conversion, volume, velocity, flow rates, chemical dosages, percent strength, and dilution calculations. Also included are some basic test-taking techniques to increase proficiency on the state exam.
Not Associate Degree Applicable.

WST 653 Wastewater Technology Math Test Preparation 16 hours lecture

This noncredit course prepares students for the quantitative and algebraic questions typically encountered on wastewater collections and wastewater treatment operations licensing examinations. This course is also recommended for students currently enrolled in water technology course(s) who desire refresher training in the applied math skills that are unique to wastewater collections and treatment operations. Topics include, but are not limited to, unit conversion, volume, velocity, flow rates, chemical dosages, process control, and solids handling. Also included are some basic test-taking techniques to increase proficiency on the state exam.
Not Associate Degree Applicable.



Santiago Canyon College

8045 East Chapman Avenue
Orange, CA 92869

The Water Utility Science program is designed to serve those individuals employed or interested in employment in the water and/or wastewater fields and those who desire to upgrade their skills and/or receive certification from the State of California, the American Water Works Association, or the California Water Environment Association.



WATR 020 Introduction to Water Science **3.0 units | 54 hours lecture**

An overview of Water Science topics including water sources and supply, water quality and regulations, water transmission and distribution, and treatment of water and wastewater. Discussions will include applicable science and math principles, current events, and Water careers. Optional field trips may be offered.

WATR 050 Water Mathematics and Hydraulics **3.0 units | 54 hours lecture**

Practical application of mathematics to perform unit conversions and to calculate areas, volumes, flow rates, pressures, velocities, chemical dosages and related hydraulic calculations used in water system operations.

WATR 052 Water Conservation Practitioner **3.0 units | 54 hours lecture**

Theoretical and practical training in applied water use efficiency. Includes residential, commercial, and landscape customers, water uses, budgets, demand management, water audits, best management practices, rate structures, program design and management. Preparation for American Water Works Association (AWWA) Grade 1 and 2 Water Conservation Practitioner certification. Optional field trips may be offered.

WATR 060 Water Utility Maintenance and Construction **3.0 units | 54 hours lecture**

Overview of procedures, equipment, tools, and terminology used in water utility maintenance and construction. Topics include related math calculations and atlas map reading. This course is intended for individuals with minimal field experience who are seeking a career in the Water Industry. Field trips may be required.

WATR 061 Water Distribution **3.0 units | 54 hours lecture**

Prerequisite: WATR 050 or current certification by the California State Water Resources Control Board as a Water Treatment, Water Distribution, or Wastewater Operator. Presents basic concepts of drinking water distribution, including water sources, water quality, and distribution system components. Water mathematics topics addressed include volume, flow rate, velocity, and chemical feeding calculations. Assists in the preparation for the California State Water Resources Control Board level D1 and D2 Water Distribution Operator certification exams. Optional field trips may be offered.

WATR 062 Advanced Water Distribution **3.0 units | 54 hours lecture**

Prerequisite: WATR 061
Presents advanced concepts of drinking water distribution, including water quality regulations, distribution system components, maps and records, and supervisory and management topics. Advanced water mathematics topics addressed include applied system and pump hydraulics. Assists in the preparation for the California State Water Resources Control Board level D2, D3, and D4 Water Distribution Operator certification exams. Optional field trips may be offered.

WATR 063 Electrical Wiring and Controls for Operators **3.0 units | 54 hours lecture**

Theoretical and practical skills needed to perform preventive maintenance and minor repair of basic electrical wiring and control systems used in water and wastewater facilities. Optional field trips may be offered.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Santiago Canyon College (Continued)

WATR 064 Pumps and Pumping **3.0 units | 54 hours lecture**

Basic pump theory, operation, and repair. Assists operators and technicians in the design, selection, installation and maintenance of various dynamic and positive displacement pumps. Topics include pumps and pump components, hydraulics, and pumping system efficiencies. Optional field trips may be offered.

WATR 065 Backflow Prevention Devices **2.0 units | 27 hours lecture, 27 hours lab**

Theory, testing, and maintenance of backflow prevention devices in water systems. Prepares the journeyman plumber, plant maintenance operator, and water utility operator to become a certified tester in Orange County. Also prepares the student for American Water Works Backflow Prevention certification exam.

WATR 071 Water Treatment Fundamentals **3.0 units | 54 hours lecture**

Prerequisite: WATR 050 or possession of current certification by the State Water Resources Control Board as a Water Treatment, Water Distribution, or Wastewater Treatment Operator

Presents the basic operating principles and techniques of the conventional surface water treatment process of coagulation, flocculation, sedimentation, and filtration, plus those of common disinfection processes. Assists in preparation for Grade T1 and T2 Water Treatment Operator certification examination given by the California State Water Resources Control Board, Division of Drinking Water Programs. Optional field trips may be offered.

WATR 072 Advanced Water Treatment **3.0 units | 54 hours lecture**

Prerequisite: WATR 071

Examines advanced topics in conventional drinking water treatment processes and disinfection, as well as non-conventional treatment processes. Assists in preparation for Grade T2 and T3 Water Treatment Operator certification examination given by the California State Water Resources Control Board, Division of Drinking Water Programs. Optional field trips may be offered.

WATR 073 Water Quality **3.0 units | 54 hours lecture**

Recommended Preparation: WATR 050

Examines basic principles of chemistry and microbiology, and applies them to drinking water quality and related state and federal regulations. Optional field trips may be offered.

WATR 074 Water Quality Laboratory Analysis **2.0 units | 27 hours lecture, 27 hours lab**

This course will present the theory and science behind common analytical methods used in drinking water and wastewater laboratories. Pertinent principles of chemistry and biology will be explored in lecture, and actual procedures will be demonstrated and conducted in the laboratory. No previous study in laboratory sciences is required. Field trips may be required.

WATR 080 Introduction to Wastewater Treatment **3.0 units | 54 hours lecture**

This course provides an overview of the basic principles of wastewater treatment including wastewater characteristics, collection systems, preliminary, primary, secondary, and tertiary treatment, wastewater recycling, and residuals handling. It is intended both for students preparing to become certified wastewater treatment operators, as well as students interested in discovering how the environmental impacts of human activities are minimized through modern wastewater treatment technologies. Field trips may be required.

WATR 081 Wastewater Treatment **3.0 units | 54 hours lecture**

Prerequisite: WATR 050 or possession of valid certification from the State Water Resources Control Board as a Water Treatment, Water Distribution, or Wastewater Treatment Operator.

Presents the basic operating principles and techniques of conventional wastewater treatment, including preliminary, primary, and secondary treatment processes, as well as wastewater quality assessment, wastewater collection, and wastewater disposal. Successful completion provides student with 48 Certification for Wastewater Professionals (CWEA) contact hours and 8 State Water Resources Control Board (SWRCB) educational points. Prepares student for SWRCB Wastewater Treatment Plant Operator exam- Grades 1 and 2. Optional field trips may be offered.

WATR 082 Advanced Wastewater Treatment **3.0 units | 54 hours lecture**

Prerequisite: WATR 081

Presents advanced operating principles and techniques of conventional wastewater treatment. Also presents operating principles and techniques of advanced processes including activated sludge, disinfection, tertiary treatment and sludge handling. Successful completion provides student with 48 Certification for Wastewater Professionals (CWEA) contact hours and 8 State Water Resources Control Board (SWRCB) educational points. Prepares student for SWRCB Wastewater Treatment Plant Operator exam- Grades 1 and 2. Optional field trips may be offered.



Santiago Canyon College (Continued)

WATR 083 Collection Systems **3.0 units | 54 hours lecture**

Sewer construction, inspection and testing, cleaning methods, safety, elementary hydraulics, pipeline repair, equipment maintenance, communications, and record keeping. Successful completion provides student with 48 CWEA contact hours and 4 SWRCB educational points. Preparation for CWEA Wastewater Collection System exam all Grades. Optional field trips may be offered.

WATR 091 Cross Connection Control Specialist **3.0 units | 54 hours lecture**

Introduction and methodology of establishing a cross connection control program. Includes local, state and federal regulations. Prepares students for American Water Works Association Cross Connection Control Specialist examination.

WATR 092 Water Utility Management **3.0 units | 54 hours lecture**

This course explores various supervision and management issues of particular relevance to the Water Utility Industry, including water quality regulations, other water industry regulations, employee safety programs, facilities security, emergency response, governing body interactions, and public relations. Field trips may be required.

WATR 107 California Water Resources **3.0 units | 54 hours lecture**

A detailed examination of the supply and demand of water in California. Topics addressed include California geography and climate, State history and the effects of population growth, water rights, water quality, water uses, the hydrologic cycle, groundwater and surface water resources. Also addressed are the major water projects in the State and the government agencies responsible for these projects, including projects and agencies that provide water to Orange County.

Exam Preparation: These courses provide a comprehensive review of topics from multiple courses in the Water Utility Science program in order to prepare students for the California State Water Resources Control Board, Wastewater Treatment Operator examinations.

WATR 048 Wastewater Operator Exam Review **9 hours lecture**

Recommended Preparation: WATR 081
WATR 048 is only a review course for the specific purpose of preparing students for the SWRCB certification exam. The topics presented in WATR 048 are presented in much greater detail in WATR 081.

WATR 054 Advanced Treatment Exam Preparation **9 hours lecture**

This course provides a comprehensive review of topics from multiple courses in the Water Utility Science program in order to prepare students for the California State Water Resources Control Board, Water Treatment Operator T3 and T4 examinations.

WATR 056 Treatment Exam Preparation **9 hours lecture**

This course provides a comprehensive review of topics from multiple courses in the Water Utility Science program in order to prepare students for the California State Water Resources Control Board, Water Treatment Operator T1 and T2 examinations.

WATR 056 Treatment Exam Preparation **9 hours lecture**

This course provides a comprehensive review of topics from multiple courses in the Water Utility Science program in order to prepare students for the California State Water Resources Control Board, Water Treatment Operator T1 and T2 examinations.

WATR 057 Water Distribution Test Preparation **9 hours lecture**

This course provides a comprehensive review of topics from multiple courses in the Water Utility Science program in order to prepare students for the California State Water Resources Control Board, Water Distribution Operator D1 and D2 examinations.

WATR 059 Advanced Distribution Exam Preparation **9 hours lecture**

This course provides a comprehensive review of topics from multiple courses in the Water Utility Science program in order to prepare students for the California State Water Resources Control Board, Water Distribution Operator D3, D4, and D5 examinations.



Rio Hondo College

3600 Workman Mill Road
Whittier, CA 90601

The Environmental Technology Water Management Certificate is designed to prepare students to enter the environmental health and safety field or to upgrade working individuals with environmental health and safety technician skills. Students will gain the skills and knowledge that allow a person to work in the environmental field in compliance with governmental regulations and at the same time protect human health and the environment.



ET 230 Safety and Emergency Response **3.0 units | 54 hours lecture**

This course is designed to provide individuals, who are working in or who seek employment in the environmental technology field, with hands-on instruction in safety and emergency response to chemical and physical exposures at hazardous waste sites. Topics include: hazard identification, emergency response planning, proper use and selection of PPE, site control and evaluation, handling drums and containers, field sampling and air monitoring, proper use of instruments, confined spaces, emergency response including field exercises in the use of APR and SCBA. This course satisfies the requirements for 40 hour HAZWOPER TRAINING under OSHA (1910.120) and confined space entry training under OSHA (1910.146).

ET 260 Environmental Sampling and Analysis **3.0 units | 54 hours lecture**

This course provides an overview of the techniques of sampling protocols for obtaining soil, air, surface water, and groundwater samples based on the U.S. EPA approved sampling protocols. In the lecture, emphasis is placed on the aspects of the procurement of the samples through the EPA approved standard operating procedures and practices. In the laboratory, the student will gain practical knowledge and skills for the appropriate collection and handling of environmental samples. 270 Wastewater Treatment Plant Operations

ET 270 Wastewater Treatment Plant Operations I **3.0 units | 54 hours lecture**

This is the initial course of a series of water treatment courses designed to train individuals, who are working in or who seek employment in the waste water treatment field, in the practical aspects of operating and maintaining wastewater treatment plants, emphasizing the use of safe practices and procedures. Information presented includes the role and responsibilities of a treatment plant operator, an explanation of why wastes must be treated, and detailed descriptions of the equipment and processes used in a wastewater treatment plant. Students will learn to operate and maintain racks, screens, sedimentation tanks, trickling filters, rotating biological contactors, package activated sludge plants, oxidation ditches, ponds, and chlorination facilities. Students will also learn to analyze and solve operational problems and to perform mathematical calculations relating to wastewater treatment process control.

ET 271 Wastewater Treatment Plant Operations II **3.0 units | 54 hours lecture**

This is the second course of a series of water treatment courses designed to train individuals, who are working in or who seek employment in the waste water treatment field, with the practical aspects of operating and maintaining wastewater treatment plants, emphasizing the use of safe practices and procedures. Information presented includes: conventional activated sludge processes, sludge digestion and solids handling, effluent disposal, plant safety and good housekeeping, plant and equipment maintenance, analysis and presentation of data, and records and report writing. Students will also learn to analyze and solve operational problems and to perform mathematical calculations relating to wastewater treatment process control.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Rio Hondo College (Continued)

ET 272 Advanced Wastewater Treatment **3.0 units | 54 hours lecture**

Prerequisite: ET 271 Wastewater Treatment Plant Operations II. This is the third course in a series of water treatment courses designed to train individuals who are working in or who seek employment in the waste water treatment field in the practical aspects of operating and maintaining wastewater treatment plants and emphasizes the use of safe practices and procedures. Topics presented include: detailed descriptions of the equipment and advanced treatment processes used for odor control, pure oxygen activated sludge treatment, solids removal from secondary effluents, residual solids management, enhanced biological control including nitrogen and phosphorus removal, and wastewater reclamation. Students will learn to operate and maintain treatment plant instrumentation equipment and systems. Additionally, students will also learn to analyze and solve operational problems and to perform mathematical calculations relating to wastewater treatment process control. This course focuses on actual operating procedures and teaches students to analyze and solve operational problems.

ET 273 Stormwater Management, Treatment and Controls **3.0 units | 54 hours lecture**

This course is designed to provide individuals, who are working in or are seeking employment in the industrial stormwater management field, with the skills necessary to manage stormwater activities at industrial sites. Such management activities would include the ability to: write stormwater plans, implement structural and non-structural best management practices, evaluate and design stormwater treatment systems, conduct laboratory testing, understand how to collect stormwater samples, evaluate low impact development methods, and understand the regulatory and political framework of stormwater management. Emphasis will be placed on the following topics: stormwater chemistry, water treatment, student designed industrial treatment systems, auditing for compliance, monitoring of the industrial effluent, interpretation of laboratory results, and how to apply the data to achieve real reductions in effluent contaminated by industrial pollutants.

ET 274 Industrial Waste Water Treatment Advisory **3.0 units | 54 hours lecture**

This course is designed to provide individuals, who are working in or seeking employment in the water management field, with the practical aspects of operating and maintaining industrial waste water treatment plants. Emphasis is placed on the following topics: role of the industrial waste water treatment operator, types of industrial waste streams, industrial waste water regulations, sources of wastes and methods for preventing and minimizing wastes at the source, and industrial waste monitoring. The plant operations and maintenance topics that will be highlighted include the following: operating and maintaining flow measure equipment, preliminary treatment processes, physical-chemical treatment processes, pressure and gravity filters, physical treatment processes, treatment of metal waste streams, and safety procedures.

ET 275 Water Treatment **3.0 units | 54 hours lecture**

This course is designed to provide individuals, who are working in or seeking employment in the water management field, with the practical aspects of operating and maintaining water treatment plants. Topics will include: responsibilities of the water treatment plant operator, sources of water, reservoir management and intake structures, coagulation and flocculation, sedimentation and filtration, disinfection and corrosion control, and taste and odor control. Day to day operating procedures will be highlighted in this course and will consist of the following topics: daily operating procedures, regulation of flows, chemical use and handling, records and reports, plant maintenance, safety and security, emergency procedures, handling complaints, and energy conservation.

ET 276 Water Distribution **3.0 units | 54 hours lecture**

This course is designed to provide individuals, who are working in or seeking employment in the water management system, with the practical aspects of operating and maintaining water distribution systems. Topics include: role and duties of water distribution system operators, procedures for operating and maintaining clear wells and storage tanks, characteristics of distribution system facilities, operating and maintaining distribution systems, maintaining water quality, disinfecting water systems, and techniques for recognizing hazards and developing safe procedures and programs. Operators also learn to analyze and solve problems associated with operating a distribution system.



Ventura College

4667 Telegraph Road
Ventura, CA 93003

The WS program provides students with the technical training they need to pursue a career in the municipal potable water and wastewater industries. Waterworks operators protect public health by ensuring that plant operations comply with state and federally mandated drinking water and wastewater disposal standards.

WS V10 Basic Water and Wastewater Systems **3.0 units | 54 hours lecture**

This course is a study of water and wastewater utility systems. Subjects to be studied will include open channel flow, pressure pipe systems, and other basic elements including storage, treatment processing, delivery and collection, piping, pumps, valves, meters and related hydraulic units. Emphasis will be on system design, installation, operation, maintenance, and safety considerations.

WS V11 Water Treatment **3.0 units | 54 hours lecture**

This course is a study of water treatment and supply. Subjects to be studied will include the historical development of water quality control, water sources, public health, water chemistry, bacteriology, chemical treatment, water filtration methods, softening, corrosion, taste and odors, and basic delivery systems.

WS V12 Wastewater Treatment **3.0 units | 54 hours lecture**

This course is a study of commonly used wastewater treatment processes. Subjects to be studied will include the principles of physical, chemical and biological wastewater treatments such as sedimentation, biofiltration, activated sludge, sludge digestion, and chlorination. This course will also include the calculations necessary to control the processes.



WS V13 Wastewater Collection **3.0 units | 54 hours lecture**

Recommended Preparation: WS V10 or equivalent
This course is a study of wastewater collection systems. It is intended for system designers, supervisors, and maintenance personnel. Subjects to be studied will include sewer design and construction, pumping stations, treatment plant operations, system cleaning methods, construction safety, elementary hydraulics, pipeline and manhole repair, equipment maintenance, public relations, organizational communication, and record keeping.

WS V14 Water Distribution **3.0 units | 54 hours lecture**

This course is a study of water distribution systems. Subjects to be studied will include water production, water storage, types of reservoirs, system design, construction methods, water lines, pumping stations, and other components. Included in this course will be a study of the installation and repair of such facilities, and the administrative functions behind the water distribution system.

WS V15 Water Systems Instrumentation and Controls **3.0 units | 54 hours lecture**

This course introduces the principles and operation of instrumentation and control devices related to water and wastewater systems. Subjects to be covered will include open and closed channel flow measurement, differential pressure measurement, level transmitters, data transmission and recording devices, and electrical control circuits. Basic electrical control theory is provided to the extent necessary for understanding principles of operation.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Ventura College (Continued)

WS V16 Water Quality Protection and Cross-Connection Control

3.0 units | 54 hours lecture

This course is an introduction to cross-connection control, cross-connection control hazards and backflow prevention devices. Subjects to be studied will include equipment installation, testing, maintenance, and regulations regarding water quality safety. This course will also cover backflow certification.

WS V17 Water and Wastewater Hydraulics

3.0 units | 54 hours lecture

This course is a study of the hydraulics necessary in the operation of water or wastewater plants and systems. Subjects to be covered will include open channel and closed channel flow, metering devices, valve design and functions, and the hydraulics of common control systems. The course will be oriented to the hydraulic problems most often encountered in operational experience.

WS V18 Motors and Pumps Maintenance And Operation

3.0 units | 54 hours lecture

This course is designed to give a working knowledge of the problems encountered in motors and pumps operation and maintenance. The course will provide the maintenance mechanic with insight into reasons for selection as well as causes of failure and breakdown of motors and pumps. The need for a thorough maintenance program will be explained. All types of pumps and pump curves will be covered.

WS V19 Advanced Water Treatment

3.0 units | 54 hours lecture

Recommended Preparation: WS V11

This course is a study in advanced potable water treatment processes. Subjects to be covered will include conventional water treatment, fluoridation, corrosion and scaling stabilization, iron and manganese control, lime and ion exchange softening, adsorption, aeration, and membrane processes.

WS V20 Water System Mathematics

3.0 units | 54 hours lecture

Introduces basic mathematical principles related to water and wastewater industry systems. Subjects included are area, volume, pressures, flow rates, unit conversion, chemical dosages, detention time and filtration rates. This course will assist in the preparation for six different state certification exams: water treatment, water distribution, wastewater collection, wastewater treatment, qualified stormwater practitioner, and qualified stormwater developer.

WS V21 Water Chemistry and Bacteriology

3.0 units | 54 hours lecture

Recommended Preparation: WS V11 or WS V12

This course covers the elements of water chemistry and water bacteriology as they apply to water treatment processes, water conditioning and the protection of water quality. The course includes laboratory demonstrations in the techniques of physical, chemical and bacteriological examination of water.

WS V22 Stormwater Pollution Prevention

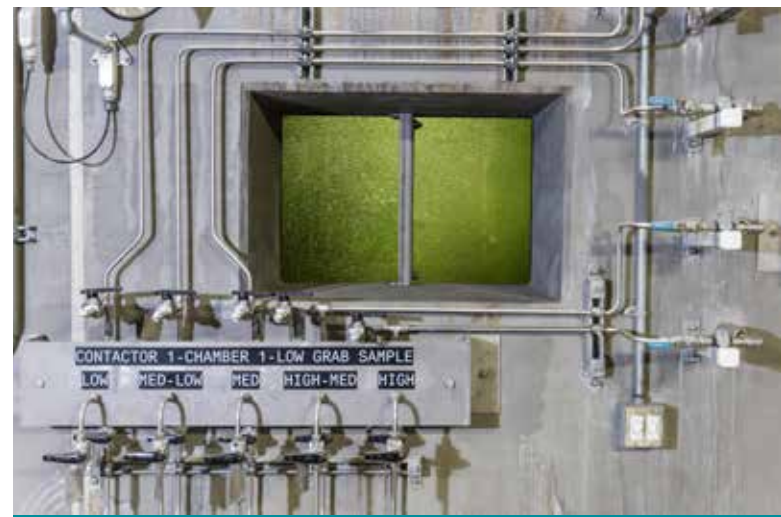
3.0 units | 54 hours lecture

This course is based upon the California Stormwater Quality Association's (CASQA) Best Management Practice Handbooks. Course content focuses on management of pollutants in stormwater runoff. It also introduces National Pollutant Discharge Elimination System (NPDES) laws and regulations. It serves as both the initial training and as Continuing Education Units (CEUs) for Professional Engineers, Municipal Employees, Construction Managers, and Regulatory Agencies.

WS V25 Water And Wastewater Management

3.0 units | 54 hours lecture

This course is a study of the supervisor's administrative responsibilities managing public utilities. Subjects to be covered will include organizational budgets, project budgets, project scheduling, human resources, providing workforce training, management/labor relations, coordinating and evaluating workers, worker grievances, industrial safety, and other workplace responsibilities.



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

Mt. San Antonio College

1100 North Grand Avenue,
Walnut, CA 91789

The Water Technology Program is an accredited and comprehensive water education program offering courses in water treatment, water distribution and cross-connection control. The program is fully recognized by the State Water Resources Control Board (SWRCB). Program courses provide the training required for employment at a municipal water district, private water utility or city water department. Upon completion of the program, students will have gained the knowledge necessary to successfully pass the CDHP Water Treatment Operator Certification exams (T1-T3), Water Distribution Operator Certification exams (D1-D3), and Cross-Connection Control Certified Specialist and Tester exams offered by the American Water Works Association (AWWA) and various County Health Departments. The 40-hour courses satisfy the educational requirements of the CDHP for both specialized training and continuing education training. Additionally, 8-hour exam review courses are offered several weeks prior to the CDHP and AWWA certification exams.



Cross-Connection Backflow Prevention Assembly Tester

Class ID: 56553
Schedule: Weekly - Mon 7:00 PM - 10:00 PM; 15 sessions;
Tuition: \$177.00
Materials Cost: \$20.00

Introduction to Water Systems

Class ID: 56657
Schedule: Weekly - Wed 6:00 PM - 10:00 PM; 10 sessions;
Tuition: \$177.00
Materials Cost: \$20.00

T1-T2 Water Treatment Operator Exam Review

Class ID: 56660
Schedule: Weekly - Sat 8:00 AM - 5:00 PM;
Tuition: \$77.00
Materials Cost: \$20.00

Water Distribution Operator (D1, D2) Exam Review

Class ID: 56661
Schedule: Weekly - Sat 8:00 AM - 5:00 PM;
Tuition: \$177.00
Materials Cost: \$20.00

Water Distribution: Water Hydraulics and Water Management

Class ID: 56659
Schedule: Weekly - Fri 6:00 PM - 10:00 PM; 10 sessions;
starting
Tuition: \$177.00
Materials Cost: \$20.00

Water Treatment

Class ID: 56658
Schedule: Weekly - Thu 6:00 PM - 10:00 PM; 10 sessions;
starting
Tuition: \$177.00
Materials Cost: \$20.00



THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA

COMMUNITY COLLEGE WATER AND RELATED PROGRAM DEGREE AND CERTIFICATE AWARDS – SOUTHERN CALIFORNIA COLLEGES

TOP4 - Program Title	2014-15	2015-16	2016-17	Latest 3 Yr Avg
Environmental Technology Total	42	71	56	56
Water and Wastewater Technology Total	324	396	359	360
Public Works Total	29	43	27	33
Grand Total	395	510	442	449

TOP4 - Program Title	2014-15	2015-16	2016-17	Latest 3 Yr Avg
030300 - Environmental Technology	-	-	-	-
030300 - Environmental Technology	-	-	-	-
Allan Hancock	-	4	5	3
Cuyamaca				
Associate Degree	17	26	21	21
Certificate 30 to < 60 semester units	-	2	-	1
Certificate 18 to < 30 semester units	2	3	5	3
Cuyamaca Total	19	31	26	25
Irvine	4	-	3	2
Oxnard	-	5	-	2
Palo Verde	1	-	1	1
Rio Hondo	-	-	-	-
Associate Degree	9	10	7	9
Rio Hondo Total	9	10	7	9
Santa Monica	-	-	-	-



TOP4 - Program Title	2014-15	2015-16	2016-17	Latest 3 Yr Avg
Associate Degree	1	5	5	4
Certificate 30 to < 60 semester units	3	4	6	4
Santa Monica Total	4	9	11	8
Santiago Canyon	-	-	-	-
Associate Degree	-	2	1	1
Certificate 18 to < 30 semester units	-	2	-	1
Santiago Canyon Total	-	4	1	2
Southwestern	5	8	2	5
030300 - Environmental Technology Total	42	71	56	56
030300 - Environmental Technology Total	42	71	56	56
095800 - Water and Wastewater Technology	-	-	-	-
095800 - Water and Wastewater Technology	-	-	-	-
Canyons	-	-	-	-
Associate Degree	9	5	11	8
Certificate 18 to < 30 semester units	8	14	19	14
Canyons Total	17	19	30	22
Citrus	-	-	-	-
Associate Degree	8	17	10	12
Certificate 18 to < 30 semester units	19	22	12	18
Citrus Total	27	39	22	29
Cuyamaca	-	-	-	-
Associate Degree	5	14	7	9
Certificate 30 to < 60 semester units	3	4	-	2
Certificate 18 to < 30 semester units	17	26	28	24
Cuyamaca Total	25	44	35	35



TOP4 - Program Title	2014-15	2015-16	2016-17	Latest 3 Yr Avg
Imperial	-	-	-	-
Associate Degree	1	1	5	2
Certificate 30 to < 60 semester units	3	-	-	1
Certificate 18 to < 30 semester units	2	3	5	3
Certificate 12 to < 18 semester units	1	-	1	1
Imperial Total	7	4	11	7
LA Trade	-	-	-	-
Associate Degree	3	6	3	4
Certificate 18 to < 30 semester units	6	11	4	7
LA Trade Total	9	17	7	11
Mt. San Jacinto	-	-	-	-
Associate Degree	10	13	17	13
Certificate 30 to < 60 semester units	21	19	19	20
Mt. San Jacinto Total	31	32	36	33
Palomar	-	-	-	-
Associate Degree	11	25	8	15
Certificate 30 to < 60 semester units	18	38	27	28
Palomar Total	29	63	35	42
San Bernardino	-	-	-	-
Associate Degree	9	12	15	12
Certificate 18 to < 30 semester units	11	7	7	8
San Bernardino Total	20	19	22	20
Santa Barbara	1	-	-	0
Santiago Canyon	-	-	-	-
Associate Degree	45	39	49	44



TOP4 - Program Title	2014-15	2015-16	2016-17	Latest 3 Yr Avg
Certificate 18 to < 30 semester units	78	76	48	67
Santiago Canyon Total	123	115	97	112
Ventura	-	-	-	-
Associate Degree	9	13	25	16
Certificate 18 to < 30 semester units	26	31	39	32
Ventura Total	35	44	64	48
095800 - Water and Wastewater Technology Total	324	396	359	360
095800 - Water and Wastewater Technology Total	324	396	359	360
210200 - Public Administration	-	-	-	-
210210 - Public Works	-	-	-	-
Citrus	-	-	-	-
Associate Degree	3	7	6	5
Certificate 30 to < 60 semester units	4	2	2	3
Certificate 18 to < 30 semester units	7	10	6	8
Citrus Total	14	19	14	16
LA Trade	-	-	-	-
Certificate 30 to < 60 semester units	1	3	-	1
LA Trade Total	1	3	-	1
Palomar				
Associate Degree	1	1	-	1
Certificate 30 to < 60 semester units	2	-	1	1
Certificate 18 to < 30 semester units	-	1	1	1
Palomar Total	3	2	2	2
Santiago Canyon	-	-	-	-
Associate Degree	3	9	6	6



TOP4 - Program Title	2014-15	2015-16	2016-17	Latest 3 Yr Avg
Certificate 18 to < 30 semester units	8	10	5	8
Santiago Canyon Total	11	19	11	14
210210 - Public Works Total	29	43	27	33
210200 - Public Administration Total	29	43	27	33
Grand Total	395	510	442	449

OUR MISSION

The mission of the Metropolitan Water District of Southern California is to provide its service area with adequate and reliable supplies of high-quality water to meet present and future needs in an environmentally and economically responsible way.

ABOUT METROPOLITAN

The Metropolitan Water District of Southern California is a state-established cooperative of 26 member agencies – cities and public water agencies – that serve 19 million people in six counties. Metropolitan imports water from the Colorado River and Northern California to supplement local supplies and helps its members develop increased water conservation, recycling, storage and other resource management programs.

BE INFORMED, BE INVOLVED

www.mwdh2o.com



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THE METROPOLITAN WATER DISTRICT
OF SOUTHERN CALIFORNIA