

# WATER SUPPLY TECHNOLOGY

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 licensing examinations and certifications from the California Department of Public Health, the California State Water Resource Control Board, the American Water Works Association, and the California Water Environment Association.

The certificate programs are designed to prepare students for entry-level jobs in water treatment, water distribution, and wastewater reclamation industries. The associate of science degree graduates often work in city, county, or state agencies in positions such as plant operator, engineering technician, surface water manager, environmental laboratory coordinator, and industrial pre-treatment coordinator.

## Contact Information

Division: Applied Technology, Transportation, and Culinary Arts (T - 108)

Division Phone Number: (909) 384-4451

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- Basic Waterworks Certificate of Completion
- Wastewater Technology Certificate of Completion
- Water Supply Technology Certificate of Achievement
- Water Technology Associate of Science Degree
- Water Use Specialist Certificate of Completion

### WST 031 3 Units

#### Water Use Efficiency Practitioner I

**Lecture:** 54 contact hours

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.

**Associate Degree Applicable**

### WST 034 3 Units

#### Introduction to Water Resource Management

**Lecture:** 54 contact hours

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.

**Associate Degree Applicable**

### WST 036 3 Units

#### Water Utility Management

**Lecture:** 54 contact hours

**Prerequisite/Corequisite:** WST 092 or WST 062 or WST 072 or WST 082

**Advisory:** ENGL 101 or ENGL 101H

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.

**Associate Degree Applicable**

### WST 037 3 Units

#### Environmental Laws and Regulations

**Lecture:** 54 contact hours

This course is designed to provide a comprehensive overview of federal, state, and local laws and regulations relating to environmental protection and pollution prevention. The course explores the roles of politics, economics, science, and health, in setting regulatory policies that are designed to safeguard and protect water resources. As a part of this course environmental monitoring standards, regulatory agencies, inter-agency relationships and jurisdictions are explored.

**Associate Degree Applicable**

### WST 038 3 Units

#### Geographic Information Systems (GIS) in Water Resources

**Lecture:** 54 contact hours

The introductory course will provide students with a deeper understanding of geography from a water utility perspective, instruction on the basics of Geographic Information Systems (GIS), and introduce them to the core principles of how the knowledge may be applied to water resource management. GIS is used to solve real world water problems including infrastructure placement and maintenance, the difficulties associated with sourcing water, moving water, and treating water as well as the impacts of these on human populations and the natural world.

**Associate Degree Applicable**

### WST 045 3 Units

#### Backflow Prevention Devices

**Lecture:** 45 contact hours

**Lab:** 27 contact hours

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.

**Associate Degree Applicable**

### WST 048 3 Units

#### Cross-Connection Control

**Lecture:** 54 contact hours

**Prerequisite/Corequisite:** 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.

**Associate Degree Applicable**

**WST 052 3 Units****Water Technology Math****Lecture:** 54 contact hours

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

**Associate Degree Applicable****WST 053 3 Units****Wastewater Technology Math****Lecture:** 54 contact hours

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.

**Associate Degree Applicable****WST 061 3 Units****Water Distribution I****Lecture:** 54 contact hours**Advisory:** WST 052

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.

**Associate Degree Applicable****WST 062 3 Units****Water Distribution II****Lecture:** 54 contact hours**Prerequisite:** WST 061

This advanced level course prepares students for journeyman level system operations in the field of water distribution. The course covers the Expected Range of Knowledge (ERK) required for the California State Water Resources Control Board (SWRCB) examination at the Water Distribution Operator IV (D4) and Water Distribution Operator V (D5) levels. Successful completion of this course also fulfills the requirements for specialized training covering fundamentals of water supply principles required to apply for SWRCB Water Treatment Operator III (T3) and Water Distribution Operator IV (D4) examinations.

**Associate Degree Applicable****WST 071 3 Units****Water Treatment I****Lecture:** 54 contact hours**Advisory:** WST 052

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) examination at the Water Treatment Operator I (T1) and Water Treatment Operator I (T2) 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.

**Associate Degree Applicable****WST 072 3 Units****Water Treatment II****Lecture:** 54 contact hours**Prerequisite:** WST 071

This advanced level course prepares students for journeyman level plant operations 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) examination at Water Treatment Operator III (T3) and Water treatment Operator IV (T4) level. Successful completion of this course fulfills the requirements for specialized training covering fundamentals of water supply principles required to apply for SWRCB Water Treatment Operator III (T3) and Water Distribution Operator III (D3) examinations.

**Associate Degree Applicable****WST 075 4 Units****Water/Wastewater Chemistry and Analysis****Lecture:** 54 contact hours**Lab:** 54 contact hours**Prerequisite/Corequisite:** 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.

**Associate Degree Applicable****WST 081 3 Units****Wastewater Collection I****Lecture:** 54 contact hours**Advisory:** WST 053

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.

**Associate Degree Applicable****WST 082 3 Units****Wastewater Collection II****Lecture:** 54 contact hours**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.

**Associate Degree Applicable**

**WST 086 3 Units****Electrical Instrumentation for Water and Wastewater Operations****Lecture:** 54 contact hours**Advisory:** WST 061 and WST 071 and WST 091

This is an introductory course in electrical instrumentation. The focus of this course will be on how electrical instrumentation is used in the water/wastewater industry. The course will cover basic electronic, electrical, and control systems used for pressure, temperature, level, and flow measurements needed for process control. Electrical safety, process and instrumentation diagrams, and other instrumentation for automation and process control will be discussed.

**Associate Degree Applicable****WST 091 3 Units****Wastewater Treatment I****Lecture:** 54 contact hours**Advisory:** WST 053

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 SWRCB examination developers as essential for a minimally competent Grade I or Grade II Wastewater Treatment Plant Operator.

**Associate Degree Applicable****WST 092 3 Units****Wastewater Treatment II****Lecture:** 54 contact hours**Prerequisite:** WST 091**Advisory:** WST 053

This is an advanced course in wastewater treatment. Students will explore 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.

**Associate Degree Applicable****WST 098 1-4 Units****Water Supply Technology Work Experience****WRKEX:** 300 contact hours**Prerequisite:** WST 061 or WST 071 or WST 081 or WST 091

Supervised training, in the form of on the job employment that will enhance the student's knowledge in the selected field of study. The student's major and job must match. For paid work, 75 hours = 1 unit; for volunteer work, 60 hours = 1 unit. Students may earn a total of 16 units toward graduation in Work Experience 098 courses. See department for specific guidelines.

**Associate Degree Applicable****WST 601 Noncredit****Test Review for Water Distribution D1****Lecture:** 9 contact hours

This non-credit 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.

**WST 602 Noncredit****Test Review for Water Distribution D2****Lecture:** 9 contact hours

This non-credit 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.

**WST 603 Noncredit****Test Review for Water Distribution Operations D3****Lecture:** 8 contact hours

This non-credit 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.

**WST 611 Noncredit****Test Review for Water Treatment T1****Lecture:** 9 contact hours

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.

**WST 612 Noncredit****Test Review for Water Treatment T2****Lecture:** 8 contact hours

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.

**WST 625 Noncredit****Test Review for Wastewater Treatment Plant Operations Grades One and Two****Lecture:** 8 contact hours

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.

**WST 626 Noncredit****Test Review for Wastewater Treatment Plant Operations Grades Three, Four and Five****Lecture:** 8 contact hours

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.

**WST 629 Noncredit****Introduction to Water Supply Technology****Lecture:** 8 contact hours

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.

**WST 631 Noncredit****Introduction to Water Use Efficiency****Lecture:** 36 contact hours

This noncredit 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 652 Noncredit****Basic Waterworks Math Test Preparation****Lecture:** 36 contact hours

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.

**WST 653 Noncredit****Wastewater Technology Math Test Preparation****Lecture:** 36 contact hours

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.

**WST 661 Noncredit****Introduction to Water Distribution****Lecture:** 36 contact hours

This noncredit 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 671 Noncredit****Introduction to Water Treatment****Lecture:** 36 contact hours

This noncredit 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 681 Noncredit****Introduction to Wastewater Collections****Lecture:** 36 contact hours

This noncredit 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 Grade I.

**WST 691 Noncredit****Introduction to Wastewater Treatment****Lecture:** 36 contact hours

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