



# Imperial Valley College

---

## **Review of Career Technical Education Training Programs** Water Treatment Systems Technology

---

**Prepared By:**  
Manuel M. Sanchez

Version # 1.0 Updated on 10.25.2013

## TABLE OF CONTENTS

1	PROGRAM DESCRIPTION.....	3
2	CAREER OPPORTUNITIES.....	3
3	INDUSTRY CERTIFICATION/ACCREDITATION .....	7
4	INDUSTRY RECOGNIZED CREDENTIALS .....	7
5	LABOR MARKET DEMAND .....	8
	5.1 LOCAL LABOR MARKET	
6	OTHER REGIONAL PROGRAMS.....	9
7	EMPLOYMENT AND COMPLETION .....	9
8	ENROLLMENT TRENDS.....	11
9	COMPLETION.....	11
10	FTES/FTEF ANALYSIS .....	12
11	FACILITY UTILIZATION PLAN .....	12
12	SWOT ANALYSIS.....	12
13	PROGRAM EVALUATION .....	12
14	RECOMMENDATION .....	12

## 1 PROGRAM DESCRIPTION

The Water Treatment Systems Technology program is designed to provide students with the comprehensive understanding and manipulative skills, technical knowledge, and related trade information required to become State-certified operator in Water Treatment, Water Distribution. This Program will allow students to comply with the necessary requirements for certification up to Grade III level. Once the student becomes a state certified operator on any or all disciplines, he or she will qualify to seek employment in the Water Treatment Systems Technology disciplines anywhere in the State.

- A. Degree  
Associate in Science, Water Treatment Systems Technology
- B. Certificate  
Certificated of Achievement, Water Treatment Systems Technology.

## 2 CAREER OPORTUNITIES

The course work at Imperial Valley College is designed to provide the student with a body of knowledge that will prepare them for a career in the water and wastewater industries as well as in the following categories:

### **Top Executive**

Under general direction of the city, managing Board of Directors, mayor, or Board of Water Commissioners, responsibilities include managing, planning, coordinating, and administering all activities of the Water Department and/or water company. Responsible for the short and long range strategy of the organization subject to review by the Board.

Median Salary: \$94,179

### **Top Planning Executive**

Responsible for functions relating to raw water development planning, protection and operation; hydraulic system planning; demographics, land use and plan review; and capital program development, both long and short range.

Median Salary: \$92,785

### **Top Operations & Maintenance Executive**

Directs and administers Operations/ Maintenance Division functions of Source and Supply, Water Treatment, Water Quality, Water Control, Transmission and Distribution, Maintenance and Process Control.

Median Salary: \$83,317

### **Top Engineering Executive**

Responsible for administering all engineering/construction programs, including special projects and the design and construction of Departmental facilities.

Median Salary: \$88,780

**Top Public Affairs Executive**

Responsible for public affairs including: media relations; conservation; intergovernmental relations; environmental coordination; and community affairs. Reviews, analyzes, and recommends Board policy.

Median Salary: \$80,146

**Conservation Manager**

Designs, directs, administers, and ensures operation of the Department's Conservation Program. Serves as the Department's representative on all local, state, and federal conservation organizations.

Median Salary: \$56,930

**Information Services Manager**

Responsible for all Information Services activities including: equipment selection, systems analysis, and programming and operations. Provides liaison with authorized users of information processing services, and develops techniques and methods for improving Departmental activities.

Median Salary: \$75,451

**Water Resource Planning Manager**

Responsible for the analysis, implementation, internal coordination, and direction necessary for development of present and future raw water resources, including hydropower, and for the protection of water rights associated with these water resources.

Median Salary: \$81,359

**Water Operations Manager**

Responsible for the operation of the water distribution system and control of the flow of filtered water into and throughout the system; plans and supervises the operation of all pumping stations and distribution reservoirs; supervises leak detection activities and 24-hour service department.

Median Salary: \$61,373

**Water Maintenance Manager**

Responsible for the construction and maintenance of the finished water distribution system and related facilities.

Median Salary: \$57,048

**Procurement Manager**

Responsible for planning, managing, coordinating, and administering the Purchasing functions.

Median Salary: \$59,476

**General Services Manager**

Responsible for planning, managing, coordinating, and administering the General Services functions of records and control, warehousing and purchasing.

Median Salary: \$67,737

**Environmental Manager**

Plans, directs, supervises, and evaluates the effectiveness of environmental programs. Analyzes data to develop recommendations for compliance with environmental legislation and to minimize negative impact of Departmental operations on the environment. Reviews environmental research representing the Department to governmental, public, and environmental groups.

Median Salary: \$69,933

**Office/Administrative Services Manager**

Responsible for direction of the functions of graphics and reproduction, records and facility mapping, mail and messenger services, switchboard and other general office functions.

Median Salary: \$45,459

**Community Affairs Manager**

Plans, develops, and administers a comprehensive public information program, including a variety of programs for the community, public, and Department work force.

Median Salary: \$61,931

**Associate Engineer**

Under direct supervision, performs a variety of routine professional level engineering work involving both office and field activities. Typically has a Bachelor's Degree in Engineering and 0-1 years of experience.

Median Salary: \$50,258

**Engineer**

Under supervision, performs a variety of complex and advanced professional level engineering work involving both office and field activities. Typically has a Bachelor's Degree in Engineering and 2-4 years of experience.

Median Salary: \$67,863

**Senior Engineer**

Under general supervision, performs a variety of complex advanced professional level engineering work involving both office and field activities. Supervises engineering activities and manages engineering projects.

Median Salary: \$76,443

**Water Quality/Laboratory Manager**

Responsible for the direction, administration, and operation of the water quality laboratory. Ensures quality and compliance with the requirements of state and federal regulatory agencies through the monitoring and testing of water introduced into the water system.

Median Salary: \$56,877

**SCADA Systems Manager**

Responsible for the operation of the SCADA system including the design, programming and maintenance of the process control system.

Median Salary: \$56,491

**Associate Programmer/Analyst**

Under direct supervision, performs programming assignments on less complex new systems and on minor revisions to existing systems. May have some user contact and perform limited systems analysis work. Typically has Bachelor's Degree in related field and 2-4 years of experience.

Median Salary: \$50,979

**Programmer/Analyst**

Under supervision, performs both systems analysis and programming activities on a variety of new and existing systems. Contacts users to determine needs and attempts to meet their needs through computer applications. Typically has Bachelor's Degree in related field and 2-4 years of experience.

Median Salary: \$56,390

**Senior Programmer/Analyst**

Under general supervision, performs system analysis and programming activities on most difficult systems and on major projects. May provide technical direction to less skilled Programmer/Analysts. Typically has Bachelor's Degree in related field and 5 or more years of experience.

Median Salary: \$68,723

**Associate Chemist**

Under direct supervision, performs chemical and physical analyses for the purpose of water quality assurance. Typically has Bachelor's Degree in Chemistry and 0-1 years experience.

Median Salary: \$35,751

**Chemist**

Under supervision, performs chemical and physical analyses for the purpose of water quality assurance. Typically has Bachelor's Degree in Chemistry and 2-4 years experience.

Median Salary: \$44,140

**Senior Chemist**

Under general supervision, performs chemical and physical analyses for the purpose of water quality assurance; develops and supports research and special projects. Typically has a Bachelor's Degree in Chemistry and 5 years experience.

Median Salary: \$51,889

**Associate Accountant**

Under direct supervision, applies general and cost accounting principles to work assignments in specialized fields. Prepares and analyses monthly statements, special reports and costs; develops rates for standard costs and overhead expense clearance. Typically has Bachelor's Degree in Accounting and 0-1 years experience.

Median Salary: \$39,242

**Water Treatment Plant Manager**

Responsible for all operations of a single water treatment plant, including staffing, training, directing operations, maintenance, and budgeting.

Median Salary: \$55,407

**Entry Level Water Treatment Plant Operator (Operator In Training)**

Under direct supervision, performs tasks related to the operation of a water treatment plant. Typically holds or is working on first-level water treatment certification.

Median Salary: \$33,775

**Water Treatment Plant Operator**

Operates and maintains a water treatment plant, including maintenance of equipment, quality control/testing, and day-to-day activities. Typically holds or is working towards an intermediate-level water treatment certification.

Median Salary: \$38,241

**Senior/Lead Water Treatment Plant Operator**

Operates and maintains a water treatment plant. Is fully qualified to perform most complex functions and may direct the work of other operators. Typically holds a high-level water treatment certification.

Median Salary: \$44,677

**Wastewater Treatment Plant Manager**

Responsible for all operations of a single wastewater treatment plant, including staffing, training, directing operations, maintenance, and budgeting.

Median Salary: \$54,570

**Entry Level Wastewater Treatment Plant Operator (Operator In Training)**

Under direct supervision, performs tasks related to the operation of a wastewater treatment plant. Typically holds or is working on first-level wastewater treatment certification.

Median Salary: \$30,227

**Wastewater Treatment Plant Operator**

Operates and maintains a wastewater treatment plant, including maintenance of equipment, quality control/testing, and day-to-day activities. Typically holds or is working towards an intermediate-level wastewater treatment certification.

Median Salary: \$36,148

**Senior/Lead Wastewater Treatment Plant Operator**

Operates and maintains a wastewater treatment plant. Is fully qualified to perform the most complex functions and may direct the work of other operators. Typically holds a high-level wastewater treatment certification.

Median Salary: \$47,761

The information for job descriptions and salary data was obtained from the 2004 AWWA Water Utility Compensation Survey. The salary data reported is the Employee Weighted Average for 521 water utilities that participated in both the 2003 and 2004 AWWA Water Utility Compensation Survey.

### **3 INDUSTRY CERTIFICATION/ACCREDITATION**

Current instructors are experienced water and wastewater professionals which prepare classes around practical examples of real-world scenarios, demonstrations, and field trips whenever possible to maximize understanding of subject matter.

Imperial Valley College is currently pursuing the acquisition of the accreditation of all Water and Wastewater courses by the following entities:

- **AWWA**, American Water Works Association.
- **C.W.E.A**, California Water Environment Association.
- **W.E.F**, Water Environment Federation.

### **4 INDUSTRY RECOGNIZED CREDENTIALS (IRC)**

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. The following are State entities that regulate and provide proper accreditation for such industries:

- **State of California Department of Public Health**
- **State of California State Water Resources Control Board**

## 5 LABOR MARKET DEMAND

The Water Treatment Systems Technology program at Imperial Valley College meets a documented labor market demand. Employment trends for this field are derived from a variety of sources. These are listed below:

**Geography: Imperial County**  
Includes: Imperial County

**Annual Job Openings by Occupation**

SOC Code	Occupation Title (Linked to "Occupation Profile")	2008 Employment	Annual Job Openings (1)
518031	Water and Liquid Waste Treatment Plant and System Operators	110	5
	<b>Total</b>	110	5

(1) Total Job Openings are the sum of new jobs from growth plus net replacements. Annual job openings are total job openings divided by the number of years in the projection period.

(2) This occupation has been suppressed due to confidentiality.

Table Generated on 10/25/2013 2:16:16 PM

### 5.1 Local Labor Market

According to United State Department of Labor, employment of water and wastewater treatment plant and system operators is projected to grow 12 percent from 2010 to 2020, about as fast as the average for all occupations. Job prospects are expected to be excellent.

The following are major local water and wastewater job providers:

- IID, Imperial Irrigation District.
- City of Calexico, Water Treatment Plant
- City of Calexico, Wastewater Treatment Plant
- Heber Public Utility District, Water and Wastewater Treatment Plants.
- City of El Centro, Water Treatment Plant
- City of El Centro, Wastewater Treatment Plant
- City of Imperial, Water Treatment Plant
- City of Imperial, Wastewater Treatment Plant
- City of Brawley, Water Treatment Plant
- City of Brawley, Wastewater Treatment Plant
- Winterhaven Water District
- Seeley County Water District
- Imperial County
- Calenergy
- El Centro Naval Air Facility
- City of Westmorland
- City of Calipatria



*Citation:*

*Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2012-13 Edition, Water and Wastewater Treatment Plant and System Operators,*

## 6 OTHER REGIONAL PROGRAMS

There no other similar training programs in Imperial Valley.

## 7 EMPLOYMENT AND COMPLETION

(Based on State Core Measures Report, 2011-2012, 2012-2013 & 2013-2014)

Core 2: Completions. Measures completions for Career Technical Education student concentrators. Receipt of a certificate or degree or enrollment in a California four-year public university with or without a degree is considered a completion.

Fiscal Year Planning	Program	Total Completions	IVC Completion Rate	State Avg. Completion Rate
2013-2014	Water Treatment Systems Technology	6/17	35.29%	62.34%
2012-2013	Water Treatment Systems Technology	9/22	40.91%	59.69%
2011-2012	Water Treatment Systems Technology	7/8	87.50%	58.50%

PERKINS IV Program Performance Trend Report

Core Indicator Two-Total Completions-Certifications, Degrees and Transfer

<https://misweb.cccco.edu/perkins/Core> Indicator Reports/Summ coreIndi.aspx

Core 3: Persistence and Transfer. The percent of Career Technical Education student Concentrators (students who have successfully completed a minimum of 12 units of related Career Technical Education coursework) who persist in education at the community college level or transfer to a two or four-year institution.

Fiscal Year Planning	Program	Persistence	IVC Percistence Rate	State Avg. Percistence Rate
2013-2014	Water Treatment Systems Technology	26/43	67.44%	78.40%

2013 Career Technical Education Training Program Review  
Water Treatment Systems Technology

---

2012-2013	Water Treatment Systems Technology	28/41	68.29%	77.98%
2011-2012	Water Treatment Systems Technology	16/19	84.21%	72.11%

PERKINS IV Program Performance Trend Report  
Core Indicator Three-Persistence and Transfer

[https://misweb.cccco.edu/perkins/Core Indicator Reports/Summ coreIndi TOPCode.aspx](https://misweb.cccco.edu/perkins/Core%20Indicator%20Reports/Summ%20coreIndi%20TOPCode.aspx)

Core 4: Student Placement. The percent of Career Technical Education students who have earnings the following year (as found in the unemployment insurance base wage file) or are in an apprenticeship program, or the military.

Fiscal Year Planning	Program	Total Placements	IVC placements Rate	State Avg. placements Rate
2013-2014	Water Treatment Systems Technology	18/18	100%	77.78%
2012-2013	Water Treatment Systems Technology	16/16	100%	80.95%
2011-2012	Water Treatment Systems Technology	5/5	100%	86.05%

PERKINS IV Program Performance Trend Report  
Core Indicator Four-Employment

[https://misweb.cccco.edu/perkins/Core Indicator Reports/Summ coreIndi TOPCode.aspx](https://misweb.cccco.edu/perkins/Core%20Indicator%20Reports/Summ%20coreIndi%20TOPCode.aspx)

Pursuant to the FCMAT report, CTE programs are also being evaluated for students demand, certificate and program completion, local labor demand, and a facility utilization for CTE programs in the new CTE building.

## 8 ENROLLMENT TRENDS

Course	Year	Sections	Avg. Class	CAP	Fill Rate
WT110	2012-2013	1	36	30	120%
WT110	2011-2012	1	32	30	107%
WT110	2010-2011	1	34	30	113.33%

Course	Year	Sections	Avg. Class	CAP	Fill Rate
WT120	2012-2013	1	28	30	96.67%
WT120	2011-2012	2	28	30	93.33%
WT120	2010-2011	2	31.5	30	105%

Course	Year	Sections	Avg. Class	CAP	Fill Rate
WT140	2012-2013	1	20	30	66.67%
WT140	2011-2012	2	24	25	96%
WT140	2010-2011	4	16	25	64%

Course	Year	Sections	Avg. Class	CAP	Fill Rate
WT210	2012-2013	1	18	30	60%
WT210	2011-2012	1	17	30	56.67%
WT210	2010-2011	1	27	30	90%

Course	Year	Sections	Avg. Class	CAP	Fill Rate
WT220	2012-2013	1	17	30	56.67%
WT220	2011-2012	1	9	30	30%
WT220	2010-2011	2	13.5	30	45%

Course	Year	Sections	Avg. Class	CAP	Fill Rate
WT230	2012-2013	1	12	30	40%
WT230	2011-2012	1	19	30	63.33%
WT230	2010-2011	1	17	30	56.67%

## 9 Completions

	2012-2013		2011-2012		2010-2011	
	Degrees	Certificates	Degrees	Certificates	Degrees	Certificates
<b>Water Treatment Systems Technology</b>	4	2	3	5	4	2

## 10 FTES/FTEF Analysis

Year	FTES	FTEF	FTES/FTEF
2012-2013	23.96	2	11.98
2011-2012	27.33	2.2	12.42
2010-2011	25.95	2.4	10.81

## 11 FACILITY UTILIZATION PLAN

## 12 SWOT ANALYSIS

Strengths	Weaknesses
Opportunities	Threats

## 13 PROGRAM EVALUATION

## 14 RECOMMENDATION