

**IMPERIAL VALLEY COLLEGE
PROGRAM REVIEW COMPLIANCE FORM AND REQUEST FOR RESOURCES**

PROGRAM/DEPARTMENT Industrial Technology Department- Water Treatment ACADEMIC YR. 2013

Comprehensive Program Review Annual Assessment Request for Resources (check all that apply)

Please analyze your Program Review data as well as your SLO/SAO assessment findings in order to update to your Comprehensive Program Review report as needed. All changes to area needs and subsequent requests for additional resources must be reported at this time.


If your program is scheduled for a Comprehensive Program Review all forms are to be completed and submitted to the appropriate Dean/VP. If you are completing the annual Program Review Assessment only and have no changes to area needs, sign below and submit this form to appropriate Dean/VP. If your needs have changed as a result of your annual assessment of program review data, please complete the appropriate Request for Resources form(s) and submit to appropriate Dean/VP.



Signature of Program Chair/Director

2/19/2013

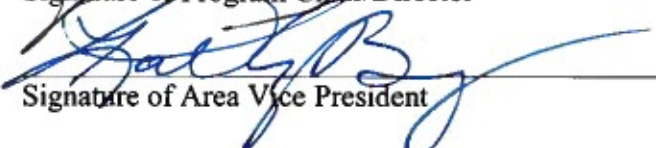
Date



Signature of Area Dean

2/20/13

Date



Signature of Area Vice President

2/22/13

Date

Please attach the following documents to this Program Review Compliance form if you are requesting additional resources:

- ✓ Comprehensive Program Review
- ✓ Data Analysis Form
- ✓ SLO/SAO Assessments
- ✓ Request for Resources Forms

**Academic Program Evaluation – WATER TREATMENT SYSTEMS TECH
Division – EWD
Department - ITEC**

WT Courses

TERM	Enrollment	Fill Rate	# of Sections	Mass Cap	Avg. Class Cap	Avg. Class Size	FTEs	FTEF	Productivity (FTEs/FTEF)	Completion Rate	Success Rate
Fall 2009	144	125.22%	4	115	28.75	36	18.75	1.01	18.56	92%	82%
Spring 2010	126	72%	6	175	29.17	21	15.64	1.48	10.57	88%	75%
Fall 2010	134	78.82%	6	170	28.33	22.33	16.84	1.48	11.38	86%	69%
Spring 2011	126	74.12%	6	170	28.33	21	15.74	1.48	10.64	83%	67%
Fall 2011	124	85.52%	5	145	29	24.8	15.78	1.21	13.04	88%	77%
Spring 2012	88	76.52%	4	115	28.75	22	11.07	1.01	10.96	88%	70%
% Change Fall Semesters 09 - 11	-13.89%	-31.70%	25.00%	26.09%	0.87%	-31.11%	-15.84%	19.80%	-29.74%	-4.35%	-6.10%
% Change Spring Semesters 10 - 12	-30.16%	6.28%	-33.33%	-34.29%	-1.44%	4.76%	-29.22%	-31.76%	3.69%	0.00%	-6.67%

PROGRAM COMPLETION

Number of certificates completed Between Fall 2009 and Spring 2012	Number of Associate Degrees Completed Between Fall 2009 and Spring 2012
3	8

Water Treatment Technology Courses – A.S. and Certificate

Associate Degree:

Required courses: WT 110, WT 120, WT 140, WT 210, WT 220

Certificate:

Required courses: WT 110, WT 120, WT 140, WT 210, WT 220

Specialization Certificate:

Required courses: WT 130, WT 150, WT 230

WATER TREATMENT SYSTEMS TECHNOLOGY COURSES - A.S AND CERTIFICATE

A.S. DEGREE: WATER TREATMENT SYSTEMS TECH

WT 110, 120, 140, 210, 220

CERTIFICATE PROGRAM: WATER TREATMENT SYSTEMS TECHNOLOGY

WT 110, 120, 140, 210, 220

SPECIALIZATION CERTIFICATE: WT 130, 150, 230

WATER TREATMENT SYSTEMS TECHNOLOGY COURSES - ENROLLMENT, FILL RATES & WAIT LISTS

COURSES	Course Cap	Enrollment - # Sections						Fill Rate						Wait Lists 1/8/2013
		F 09	S 10	F 10	S 11	F 11	S 12	F 09	S 10	F 10	S 11	F 11	S 12	S 13
WT 110	30	49 - 1		34 - 1		32 - 1		163.33%		113.33%		106.67%		
WT 120	30	29 - 1	30 - 1	29 - 1	34 - 1	27 - 1	29 - 1	96.67%	100%	96.67%	113.33%	90%	96.67%	
WT 130	30	34 - 1		28 - 1		31 - 1		113.33%		93.33%		103.33%		
WT 140	30	32 - 1	32 - 2	27 - 2	37 - 2	25 - 1	23 - 1	128%	58.18%	54%	74%	100%	92%	
WT 150														
WT 210	30		29 - 1		27 - 1		17 - 1		96.67%		90%		56.67%	
WT 220	30		18 - 1	16 - 1	11 - 1	9 - 1			60%	53.33%	36.67%	30%		
WT 230	30		17 - 1		17 - 1		19 - 1		56.67%		56.67%		63.33%	

WATER TREATMENT SYSTEMS TECHNOLOGY COURSES - PRODUCTIVITY (FTES/FTEF)

COURSE	FTES						FTEF						PRODUCTIVITY					
	F 09	S 10	F 10	S 11	F 11	S 12	F 09	S 10	F 10	S 11	F 11	S 12	F 09	S 10	F 10	S 11	F 11	S 12
WT 110	6.72		4.66		4.39		0.27		0.27		0.27		24.89		17.26		16.26	
WT 120	2.98	3.09	2.98	3.5	2.78	2.98	0.2	0.2	0.2	0.2	0.2	0.2	14.90	15.45	14.90	17.50	13.90	14.90
WT 130	4.66		3.84		4.25		0.27		0.27		0.27		17.26		14.22		15.74	
WT 140	4.39	4.39	3.71	5.08	3.43	3.15	0.27	0.54	0.54	0.54	0.27	0.27	16.26	8.13	6.87	9.41	12.70	11.67
WT 150																		
WT 210		3.98		3.70		2.33		0.27		0.27		0.27		14.74		13.70		8.63
WT 220		1.85	1.65	1.13	0.93			0.20	0.20	0.20	0.2			9.25	8.25	5.65	4.65	
WT 230		2.33		2.33		2.61		0.27		0.27		0.27		8.63		8.63		9.67

WATER TREATMENT SYSTEMS TECHNOLOGY COURSES - COMPLETION & SUCCESS RATES

COURSE	Completion Rate						Success Rate					
	F 09	S 10	F 10	S 11	F 11	S 12	F 09	S 10	F 10	S 11	F 11	S 12
WT 110	96%		94%		88%		84%		85%		75%	
WT 120	93%	83%	79%	74%	96%	83%	86%	53%	45%	68%	85%	52%
WT 130	82%		86%		87%		71%		79%		87%	
WT 140	94%	78%	81%	84%	88%	83%	88%	63%	56%	46%	72%	78%
WT 150												
WT 210		97%		93%		88%		93%		89%		71%
WT 220		94%	88%	82%	67%			89%	81%	73%	33%	
WT 230		94%		82%		100%		88%		76%		89%

Recent Enrollment Demand: High Medium Low

Projection for Future Demand: Growing Stable Declining

Opportunity Analysis: (Successes, new curriculum development, alternative delivery mechanisms, interdisciplinary strategies, etc.)

The Water Treatment Major and Certificate consist of five (5) courses and with (18 units).

The program offers 4-6 courses per semester. According to the data of 2009 - 2012, the fill rate average was 98%, student success was 80%, and the student completion rate was 90%. Also, the program provided eight (8) majors and three (3) certificates to the students.

Most of the courses have been offered during two semesters.

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 are required to become State-certificated operators in water treatment and water distribution.

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 system technology discipline anywhere in the state.

Analysis

Based on data for the past six semesters from Fall 2009 - Spring 2012 are as follow:

- a) The program offers Four - six (4-6) courses per semester.**
- b) Average enrollment is a total of 144 students.**
- c) Cap per section is twenty eight (28) students.**
- d) Average fill rate per course is 90%.**
- e) Average class size is 30 students.**
- f) Average completion rate is 86%.**
- g) Average success rate is 74%.**

Summary of Program "Health" Evaluation: (Including consideration of size, score, productivity and quality of outcomes)

The health of the Water Treatment Program has an average and stable fill rate of 99% with an average of total enrollment of 144 students with a cap section of 28 students per class.

There are 18 units for an Associate Degree (A.S.) and Certificate.

According to the data, eight majors (A.S.) and three (3) certificates were awarded to the students during 2009 - 2012.

Most of the courses are taught every two semesters with four (4) part-time instructors.

This program provides students the necessary skills and knowledge and related trade information to become State - certified operator in water treatment and water distribution.

Job opportunities

- **City water plants.**
- **Valley area water plants.**
- **Valley/state schools water plants.**
- **State government water plants.**
- **Private Co. water plants**
- **Thermal Co. water plants.**
- **According to Occupational Outlook Handbook, the median annual wage of water treatment operators was from \$38,740 to 42,580 in May 2010. Employment of water treatment operators is projected to grow 22 percent from 2010 to 2020, faster than the average for all occupations. State and local government concerns regarding water should lead to efforts to increase efficiency of water use.**

Student Learning Outcomes and Program Learning Outcomes

Future Goals of Program

1. Need special classroom for water treatment analysis.
2. The program needs a full-time faculty.
3. Certify the program with the state requirements.
4. Create an active advisory committee for water treatment program.
5. Develop an assessment program for water treatment program.
6. New and modern equipment and components are needed.
7. Create workshops for students and local water treatment companies.
8. Create job placement and form a partnership with local and State companies.

Resource requests from annual program review

1. Hire a well-qualified and prepared full-time instructor.
2. Develop a classroom and laboratory for water treatment students.
3. Need more class smart features and trainers.

Student Learning Outcomes Assessment-completion

<u>Course</u>	<u>SLO's Cycle</u>	<u>Assessment Completed</u>	<u>ISLO Linked To</u>
WT 110	<ol style="list-style-type: none"> 1. Develop knowledge on the physical, chemical, and biological principles of unit processes and operations commonly used in water treatment. 2. Identify the importance of the acquisition of knowledge and skills to required to provide the public with a reliable, and safe water supply. 3. Correctly identify the origins, risks and assessments of contaminants in water. 4. Recognize the risks associated with chemicals and equipment used in water treatment and will be able to demonstrate the ability to use proper techniques and procedures necessary to protect themselves, co-workers and the public. 	Identified	<ol style="list-style-type: none"> 1. IL02,IL03,IL04 2. IL02,IL03,IL04,IL05 3. IL01,IL02,IL03,IL04 4. IL01,IL02,IL03,IL04,IL05
WT 120	<ol style="list-style-type: none"> 1. Correctly calculate water treatment plant math problems including chemical dosages, flow rates, volumes, detention times, horsepower and energy costs. 2. Demonstrate basic abilities to identify troubleshoot and resolve treatment process problems that could compromise the proper water treatment processes as well as involved water related regulations. 3. Identify mathematical methods that can be used to improve the performance of the water treatment plant. 	Identified	<ol style="list-style-type: none"> 1. IL02,IL03,IL04 2. IL01,IL02,IL03,IL04,IL0 3. IL02, IL03, IL04

<p>WT 130</p>	<p>1. Apply scientific methods for the proper wastewater treatment process. 2. Describe fundamental concepts in physics, and microbiology involved in the wastewater treatment process. 3. Interpret and use analytical data to performed operational adjustments as required in the wastewater treatment. 4. Use legal/ethical principles in wastewater treatment operational adjustments to satisfy involved regulations.</p>	<p>Identified</p>	<p>1. IL02, IL03, IL04 2. IL01, IL02, IL03, IL04 3. IL01, IL02, IL03, IL04 4. IL01, IL02, IL03, IL04, IL05</p>
<p>WT 140</p>	<p>1. Correctly perform basic operational adjustments and calculations for the operation of a water distribution system. 2. State and observe the implied responsibilities related to the operation of the water distribution system. 3. Analyze water samples laboratory data to perform operational adjustments in the water distribution system. 4. Feel more confident about their ability to identify cross connections.</p>	<p>Identified</p>	<p>1. IL02, IL03, IL04 2. IL02, IL03, IL04, IL05 3. IL01, IL02, IL03, IL04 4. IL01, IL02, IL03, IL04, IL05</p>

WT 150	<ol style="list-style-type: none"> 1. Identify and properly operate each component of a wastewater collection system. 2. Describe and understand importance of standard operating procedures within a wastewater collection system. 3. Describe and correctly restore abnormal conditions in a wastewater collection system. 4. Identify equipment used during maintenance of wastewater collection system. 	Identified	<ol style="list-style-type: none"> 1. IL02, IL03, IL04 2. IL02, IL03, IL04 3. IL02, IL03, IL04 4. IL04
WT 210	<ol style="list-style-type: none"> 1. Understand and evaluate issues concerning effective treatment of water. 2. Assume responsibility for water treatment operational changes and work effectively as an individual and as a member of a group. 3. Apply ethics and principles to address involved drinking water regulations. 4. Analyze, understand, and evaluate diverse ideas, beliefs, and behaviors to develop responsible managerial aptitudes. 	Identified	<ol style="list-style-type: none"> 1. IL02, IL03, IL04 2. IL02, IL03, IL04 3. IL02, IL03, IL04, IL05 4. IL02, IL03
WT 220	<ol style="list-style-type: none"> 1. Apply mathematical principles to address and solve problems related to water and wastewater treatment technologies. 2. Enhance treatment systems by interpretation of hydraulic volumes, dimensional analysis, primary and secondary sewage treatment, calculations and chemical dose rates as it relates to water/wastewater technology 3. Understand and evaluate issues concerning the proper use and distribution of the water natural resources. 4. Understand and evaluate issues concerning the proper use and distribution of the water 	Identified	<ol style="list-style-type: none"> 1. IL02, IL03, IL04 2. IL02, IL03, IL04 3. IL01, IL02, IL03, IL04, IL05 4. IL02, IL04

	natural resources.		
WT 230	<p>1. Gather and interpret data, using microbiology knowledge and other scientific methods, to address and solve both practical and theoretical problems in the wastewater treatment.</p> <p>2. Access, interpret, evaluate and apply information using multiple resources, including current information technology for proper wastewater treatment plant operation and maintenance.</p> <p>3. Display and follow safety procedures in the practical aspects of operating and maintaining wastewater treatment plants.</p> <p>4. Analyze and apply mathematical principles to address and solve wastewater operational issues.</p>	Identified	<p>1. ILO2, ILO3, ILO4</p> <p>2. ILO1, ILO2, ILO3, ILO4</p> <p>3. ILO1, ILO2, ILO3, ILO4</p> <p>4. ILO2, ILO3, ILO4</p>

Program Learning Outcomes Assessment.

1. Outcome #1- Demonstrate knowledge of: Water source, treatment, flocculation, sedimentation, odor control, plant operation and laboratory procedures.

Est. Completion Date: 6/30/12 **Way(s) to assess:** Assessment will be based by: Groups discussions, analysis performed, field trips, class presentations and by hands-on activities.

2. Outcome #2:- Ability to calculate all basic mathematic problems that applied to treatment plant operations. This calculation includes fractions decimals, percentages, ratios, proportions, volumes, metric system and estimation.

Est. Completion Date: 10/15/12 **Way(s) to assess:** Assessment will be based by: Class activity, mid-term, problem solving exercise, and quizzes.

3. Outcome #3: Develop preventative maintenance programs and maintain records of inspection and repair for all water works.

Est. Completion Date: 11/17/12 **Way(s) to assess:** Students will complete four-in-class quizzes with eight-three page technical essays related to: water distribution system maintenance and repair.