

Instructional Program Review and Planning 2016-2017 ANNUAL UPDATE

Discipline(s) Reviewed: Water/Wastewater Technology

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I. Student Learning Outcomes Assessment Reflection *(Use all of the following to reflect on the previous year's course and program outcomes assessment.)*

- a. Describe how the dialogue and reporting of SLO Assessment results is taking place in your program. Did it impact your program or institutional effectiveness of your program? Have there been any direct changes made to courses or programs from SLO assessment results? How did these changes impact student behavior and achievement, changes in curriculum, programs of study and/or delivery of instruction?

SLO results are evaluated and discussed by all WWTR instructors twice annually at the Department meeting ahead of the Fall and the Spring semester. By consensus of the instructors, it was decided that SLO's achieving a 70% or better success rate were successful, and those SLO's scoring less than 70% needed improvement. During the 2014-15 school year, 23 out of the total of 24 WWTR courses were assessed, totaling 117 assessed SLO's and achieving an aggregate success rate of 86%. 16 courses (79 SLO's) were assessed in Fall 2014 and 7 courses (38 SLO's) were assessed in Spring 2015. 107 of the total of 117 SLO's were rated successful (>70%) with an aggregate success rate of 88%. 10 of the total of 117 SLO's needed improvement (<70%) with an aggregate success rate of 63%.

The WWTR instructors discussed the SLO's that needed improvement at the Department meetings in Spring 2015 and Fall 2015 and made suggestions as to how those results could be improved. By consensus of the instructors, it was determined that refocusing the curriculum to more aggressively emphasize those SLO's that were underperforming would be sufficient to improve student success in those areas.

The assessments that took place during the Fall '14 and Spring '15 semesters were the first SLO assessments conducted by the WWTR Department. These first assessments will provide the baseline that future SLO assessments will be measured against. Adjustments to the appropriate courses have been made, or are being made, at this time. Until another round of SLO assessment is conducted, it is not possible to determine if improvements in student success have been achieved.

- b. Please share a success story about the impacts of SLO assessment practices on student learning, achievement, and institutional effectiveness.

The WWTR Department is not able to share any success stories at this time. When future SLO assessment is conducted and compared to the existing baseline data of SLO assessment, any success stories resulting from the SLO assessment process will be shared accordingly.

II. Student Achievement and Program Innovation Reflection

Describe examples of effective and/or innovative practices in your program for evaluating programmatic performance related to student achievement, and changes that have happened in response to analyzing program performance.

All of the instructors in the WWTR program are long-term water industry employees with 20+ years of experience working in their areas of proficiency. Lectures, demonstrations, videos, and other types of classroom instruction are augmented with real-world examples of how subject theory is applied to the actual field work. This blending of classroom theory and field reality has always been the hallmark of the WWTR program, and has been utilized for decades. We believe this practice is very effective in preparing the student for employment in the industry, and our history of success in our students obtaining careers in the industry bears this out.

III. Vision and Activities (repeat III.a. as needed)

a. Previous Year Activity 2014-2015 Progress Report [{link}](#)

No previous year activities

What were the results of your program's previous year program review activities? (From 2014-2015 Section D2). Provide an update on the current status of the activity; all activity(ies) should be included, regardless of funding source.

Activity: **NA**

Outcomes & Evidence: **NA**

Improvements to Student Success: (include data) **NA**

- b. Please provide a summary of your five-year vision for your program. (What do you want your program to be like in five years? How would it be better than/different from your current program? Consider student success and completion, curriculum development, new programs, refinement of instruction, textbook changes, technology integration, staff training, cross-discipline collaboration, collaboration with student services, or any other factors that are part of your plan to take your program to the next level of development).

The Water & Wastewater Technology Program has an ambitious vision of what we want the program to be over the next five years. We want to increase enrollment, expand curriculum offerings, augment existing curricula to include more "hands-on" learning, and focus on preparing our students for careers in the workplace. Specific actions to achieve these goals are summarized as follows:

1. WWTR will develop the "Institute for Water Studies", which will provide students with hands-on skill building opportunities utilizing labs for water quality analysis, backflow prevention assembly testing & certification, pipeline, storage, pumping, and instrumentation systems, and mechanical trouble-shooting and repair of water distribution system components.
 - a. The "Institute for Water Studies" will include an above-ground water distribution demonstration system and lab where students can perform "hands on" work with pumps, valves, meters, pipes, tanks, and related appurtenances that replicate the complex infrastructure utilized by the water and wastewater industry.
2. Modify and expand existing curriculum to include "hand on" learning utilizing the above-ground water distribution demonstration system in the following courses: WWTR 130, 132, 112, 114, 117, 120, 265, and 267.
3. Develop new curriculum necessary to keep pace with the rapidly developing technology and methods employed by the water and wastewater industry, as follows:
 - a. A "hands on" Pumps and Valves course to augment our existing WWTR 134 course.
 - b. An advanced SCADA & Instrumentation course to augment our existing WWTR 106 course.
 - c. An advanced Membrane Plant Operation course to augment our existing WWTR 268 course.
 - d. An advanced Laboratory Analysis course to augment our existing WWTR 110 course.
4. Improve workforce readiness by integrating the American College Testing Work Keys curricula into all Water & Wastewater Technology core courses.
 - a. Improve student soft skills by integrating the ACT National Career Readiness Certification training and testing program into existing curricula.
5. WWTR will develop a proactive outreach and recruitment program that targets women, under-represented minorities, and transitioning military personnel and veterans by implementing the following:
 - a. Produce recruitment videos targeted specifically at women, under-represented minorities, and transitioning military personnel.

- b. Develop and host a “Women in Water” conference to encourage women to consider technician positions in the water and wastewater industry.
- c. Develop a mentoring program for women and under-represented professionals in the water and wastewater industry.
- d. Partner with the Institute for Women in Trades, Technology, and Science, an NSF grantee experienced in recruiting and retaining female students in nontraditional programs.
- e. Implement recruitment activities targeted to transitioning military personnel with specific STEM Military Occupational Specifications (MOS).
- f. Conduct at least two periodic recruitment fairs with transitioning military personnel.
- g. Coordinate with the VA and Zero8Hundred to conduct outreach during the military’s transition process for Navy and Coast Guard members (referred to as Goals, Plans and Success [GPS]).
- h. Expand collaborative efforts working with local water & wastewater agencies, water industry professional associations, and other community colleges to insure that our program’s water and wastewater technology curricula and facilities are aligned with, and responsive to, the needs of the water and wastewater industry.

6. WWTR will provide K-12 students and teachers with learning opportunities in water and wastewater technology to promote STEM proficiency as follows:

- a. Create water studies modules designed for K-12 students that provide contextualized learning in STEM and promote environmental awareness and conservation.
- b. Provide professional development for K-12 teachers to deliver the modules through a summer seminar series at Cuyamaca College.
- c. Coordinate water and wastewater industry facilities tours for K-12 STEM teachers.

c. Proposed **Continuing** Activities for 2016-2017 (repeat III.c. as needed)

Activity No. **NA** Activity Title: **NA**
 Planned Activity: **NA**

What is the relationship between your five-year vision and this activity? **NA**

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity: **NA**

How and when will the activity be assessed and evaluated? **NA**

General Fund ☐ Yes ☒ No

Estimated Cost: **NA**

Budget Justification: **NA**

d. Proposed **New** Activities for 2016-2017 (repeat III.d. as needed)

Activity No. **1** Activity Title: **Establish the “Institute for Water Studies”**
 Planned Activity: **Re-purpose the “L” building as the “Institute for Water Studies”**

What is the relationship between your five-year program vision and this activity?

Establishing the “Institute for Water Studies” is the key component to our vision of expanding the Water & Wastewater Technology Program. It will establish a campus location and an identity for the program. It will allow us to expand our lab capabilities, modify curriculum to include “hands-on” learning, and provide additional classroom space to develop and accommodate expanded curriculum and increased enrollments in the program.

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity:

The original campus master plan included the demolition of the “L” building. The size and configuration of the building is ideally suited to house our program. The cost to re-purpose the existing “L” building into the “Institute for Water Studies” will be on par with the cost to demolish it, and significantly less than the cost of constructing a new facility. It

is clearly cost-effective to pursue this option to house the Water and Wastewater Technology Program, and it is consistent with our goals to expand and improve the Water & Wastewater Technology Program.
How and when will the activity be assessed and evaluated?

This activity will be assessed by analyzing the relevant available data regarding enrollment, student success, student characteristics, and WSCH within one year of implementation.

General Fund ☐ **Yes** ☒ **No** **(Prop V Facilities Construction Bond)**

Estimated Cost: **\$462,990 Total (2016-17 funding and timing unknown)**

Budget Justification: **NA**

Activity No. 2 Activity Title: **Outdoor Above-Ground Demonstration Water Distribution System & Lab Facility.**
Planned Activity: **Design and construct an outdoor above-ground water distribution system lab facility.**

What is the relationship between your five-year program vision and this activity?

The development of the outdoor, above-ground demonstration water distribution system and lab facility is an integral component of our vision for expanding “hands-on” learning opportunities for our students.

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity:

The feedback we have consistently received from our Industry Advisory Committee is that the pool of potential employees for the industry often lack mechanical skills and aptitudes for entry level positions, increasing the training time industry agencies spend with new employees. This activity will enable our program to modify existing curriculum and develop new curriculum to include “hands-on” mechanical training in a variety of typical water and wastewater industry work tasks to better prepare our program graduates to compete for entry level jobs in the industry.

How and when will the activity be assessed and evaluated?

This activity will be assessed by analyzing the relevant available data regarding enrollment, student success, student characteristics, and WSCH within one year of implementation.

General Fund ☐ **Yes** ☒ **No** **(Combination of Anticipated Grant Funds and Private Donations)**

Estimated Cost: **\$179,480 Total (\$88,480 2016-17, \$45,500 2017-18, \$45,500 2018-19)**

Budget Justification: **NA**

Activity No. 3 Activity Title: **Modify and Expand Existing Curriculum**
Planned Activity: **Modify and expand the existing curriculum to include “hands on” learning, utilizing the above ground water distribution demonstration system in the following courses: WWTR 130, 132, 112, 114, 117, 120, 265, and 267.**

What is the relationship between your five-year program vision and this activity?

Modifying existing curriculum to include “hands-on” training in a variety of typical water and wastewater industry work tasks is an integral component of our vision to improve the aptitude, skills, and abilities of our program graduates to better prepare them to be more competitive for entry level positions in the industry.

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity:

Our Industry Advisory Committee has repeatedly indicated to us that the pool of potential employees for the industry often lack mechanical skills and aptitudes for entry level positions. This activity will enable our program to modify existing curriculum to include “hands-on” mechanical training in a variety of typical water and wastewater industry work tasks to better prepare our program graduates to compete for entry level jobs in the industry.

How and when will the activity be assessed and evaluated?

This activity will be assessed by analyzing the relevant available data regarding enrollment, student success, student characteristics, and WSCH within one year of implementation.

General Fund ☐ **Yes** ☒ **No** (Grant Funding Anticipated)

Estimated Cost: **\$102,110 Total (\$34,800 2016-17, \$35,150 2017-18, \$32,160 2018-19)**

Budget Justification: **NA**

Activity No. 4 Activity Title: **Develop New Curriculum**

Planned Activity: **Develop new curriculum necessary to keep pace with the rapidly developing technology and methods employed by the water and wastewater industry, as follows:**

- 1. A “hands on” Pumps and Valves course to augment our existing WWTR 134 course.**
- 2. An advanced SCADA & Instrumentation course to augment our existing WWTR 106 course.**
- 3. An advanced Membrane Plant Operation course to augment our existing WWTR 268 course.**
- 4. An advanced Laboratory Analysis course to augment our existing WWTR 110 course.**

What is the relationship between your five-year program vision and this activity?

Expanding the existing program curriculum to include instruction in newer industry technologies and work methods is an integral component of our long-term vision for the program and necessary to keep pace with a rapidly evolving water industry.

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity:

The water and wastewater industry has undergone rapid changes over the last several years, embracing new technologies and work methods in order to continue providing a high level of service in the face of rapidly rising costs, population growth, diminishing water supply, and the need to create sustainable water supply systems. It is imperative that the Water and Wastewater Technology Program keep pace with the rapidly evolving technologies and needs of the industry in order to adequately prepare our students for entry level jobs in the water and wastewater profession.

How and when will the activity be assessed and evaluated?

This activity will be assessed by analyzing the relevant available data regarding enrollment, student success, student characteristics, and WSCH within one year of implementation.

General Fund ☐ **Yes** ☒ **No** (Grant Funding Anticipated)

Estimated Cost: **\$170,190 Total (\$58,000 2016-17, \$58,580 2017-18, \$53,610 2018-19)**

Budget Justification: **NA**

Activity No. 5 Activity Title: **Improve and Develop Workforce Readiness**

Planned Activity: **Integrate the American College Testing Work Keys curricula into all Water & Wastewater Technology core courses and improve student soft skills by integrating the ACT National Career Readiness Certification training and testing program into existing curricula.**

What is the relationship between your five-year program vision and this activity?

Preparing our students with the skills and aptitudes for learning, personal development, and effective job performance necessary for work-place readiness is a key component of our five year program vision.

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity:

Industry Advisory Committee feedback to our program has long indicated that potential new hires are often unprepared to enter the workplace, lacking the necessary reading, writing and analytical skills to be effective in the

workplace. The ACT Work Keys program will enhance our existing curriculum by better preparing students with necessary workplace skills. The ACT Soft Skills system will enhance student readiness for employment by improving interpersonal and business communications, problem solving and critical thinking, working productively on a team, assisting customers effectively, and developing good work habits and workplace discipline.

How and when will the activity be assessed and evaluated?

This activity will be assessed by analyzing the relevant available data regarding enrollment, student success, student characteristics, and WSCH within one year of implementation.

General Fund ☐ Yes ☒ No (Grant Funding Anticipated)

Estimated Cost: \$68,070 Total (\$23,200 2016-17, \$23,430 2017-18, \$21,440 2018-19)

Budget Justification: NA

Activity No. 6 Activity Title: Develop Outreach and Recruitment Programs

Planned Activity: Develop proactive outreach and recruitment programs targeting women, under-represented minorities, and transitioning military personnel and veterans by implementing the following activities:

- a. Produce recruitment videos targeted specifically at women, under-represented minorities, and transitioning military personnel.
- b. Develop and host a “Women in Water” conference to encourage women to consider technician positions in the water and wastewater industry.
- c. Develop a mentoring program for women and under-represented professionals in the water and wastewater industry.
- d. Partner with the Institute for Women in Trades, Technology, and Science, an NSF grantee experienced in recruiting and retaining female students in nontraditional programs.
- e. Implement recruitment activities targeted to transitioning military personnel with specific STEM Military Occupational Specifications (MOS).
- f. Conduct at least two periodic recruitment fairs with transitioning military personnel.
- g. Coordinate with the VA and Zero8Hundred to conduct outreach during the military’s transition process for Navy and Coast Guard members (referred to as Goals, Plans and Success [GPS]).
- h. Expand collaborative efforts working with local water & wastewater agencies, water industry professional associations, and other community colleges to insure that our program’s water and wastewater technology curricula and facilities are aligned with, and responsive to, the needs of the water and wastewater industry.

What is the relationship between your five-year program vision and this activity?

Promoting Water & Wastewater careers to women, under-represented minorities, and military veterans is key to improving their participation in the WWTR Program and consistent with our five year vision to expand enrollments in the program.

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity:

The data indicates that women and under-represented minorities comprise less than 20% of total enrollments over the last five years in the WWTR Program. Our goal is to actively recruit these populations and encourage them to pursue careers in the water and wastewater field, thereby contributing to our efforts to expand enrollment in the WWTR Program.

Veterans and transitioning military personnel comprise a slightly higher percentage of total enrollments, but we would like to see improvement in these enrollments as well. Veterans are highly sought after by the water and wastewater industry due to their strong mechanical aptitude and ability to adapt to a rigidly structured work environment. Promoting water and wastewater careers to veterans to increase their participation in the program is consistent with our goal to expand enrollments.

How and when will the activity be assessed and evaluated?

This activity will be assessed by analyzing the relevant available data regarding enrollment, student success, student characteristics, and WSCH within one year of implementation.

General Fund ☐ Yes ☒ No (Grant Funding Anticipated)

Estimated Cost: **\$170,190 Total (\$58,000 2016-17, \$58,580 2017-18, \$53,610 2018-19)**

Budget Justification: **NA**

Activity No. 7 Activity Title: Promote STEM Proficiency for K-12 Students and Teachers

Planned Activity: Provide K-12 students and teachers with learning opportunities in water and wastewater technology to promote STEM proficiency as follows:

- a. Create water studies modules designed for K-12 students that provide contextualized learning in STEM and promote environmental awareness and conservation.**
- b. Provide professional development for K-12 teachers to deliver the modules through a summer seminar series at Cuyamaca College.**
- c. Coordinate water and wastewater industry facilities tours for K-12 STEM teachers.**

What is the relationship between your five-year program vision and this activity?

Promoting STEM proficiency, and awareness of water and wastewater issues and technology, to K-12 teachers and students in order to increase the number of high school graduates interested in careers in water and wastewater is consistent with our goal of increasing enrollments in the WWTR Program.

Discuss the data and/or rationale (may or may not include outcomes assessment) that helped you decide to engage in this activity:

The most under-represented population in our program are high school graduates. The water and wastewater industry is not well understood by the general public, much less high school students, and most students are unaware of the potential for pursuing a very rewarding career in this industry. The water and wastewater profession is also highly technical in nature, requiring a high level of proficiency in science, technology, engineering and math skills. Educating K-12 teachers and students in the issues, technology, and science of water and wastewater is a step towards increasing the pool of high school graduates aware of, and prepared for, pursuing a career in the water and wastewater industry. This activity is another component of our vision to increase future enrollment and participation in the Water and Wastewater Technology Program.

How and when will the activity be assessed and evaluated?

This activity will be assessed by analyzing the relevant available data regarding enrollment, student success, student characteristics, and WSCH within one year of implementation.

General Fund ☐ Yes ☒ No (Grant Funding Anticipated)

Estimated Cost: **\$170,190 Total (\$58,000 2016-17, \$58,580 2017-18, \$53,610 2018-19)**

Budget Justification: **NA**

IV. Resource Requests *(all other requests, see Special Requests below)*

(In this section you should write a clear reason that summarizes your request)

- a. Staffing Requests: The Water and Wastewater Technology Program is requesting a second full-time instructor for the program. Currently, the program employs one full-time instructor and ten adjunct instructors to teach the 24 courses, supporting six certificates or degrees, available in the program. Current staffing levels will not allow for expansion of the program beyond what we can accomplish at this time. In order for us to expand the program as detailed in our five year vision, it will be necessary to hire a second full-time instructor. The second full-time instructor ideally will have career emphasis in Wastewater Technology, to complement the existing full-time instructor's career emphasis in Water Technology. One of**

the key emerging trends in the Water Industry today is the development of methods and technology for purifying wastewater into drinking water. The second full-time instructor must be knowledgeable of the most recent methods and trends utilizing membrane technology as applied to wastewater purification.

- b. Instructional Need Augmentation(s) (Repeat IV.b as needed)
 proposed enhancements to existing general fund baseline budget}
 Amount Requested: [Click here to enter text.](#)
 Description & Justification: [Click here to enter text.](#)

- c. Summarize your discipline operating budget and **ALL** resource requests from all sources in the table below

Object Keycode	Description	Current Year Budget Amount and Funding Source (GF, Tech, BS, CTE, EQ, FD, OG)	\$ Amount requested for Next Year and Source Requested From (GF, Tech, BS, CTE, EQ, FD, OG)
EXAMPLE	Supplies	\$100 GF \$50 BS	\$150 GF \$25 BS
2312	Short Term Hourly		
2411	Student Hourly		
	NANCE		
4310	Supplies	\$400 GF	\$600 GF
5220	Mileage		
5320	Fees		
5350	Software Licenses		
5610	Contract Maintenance		
5620	Rentals/Leases		
5640	Repairs Outside Vendor		
5830	Postage/Freight		

GF=General Fund **Tech**=Tech Plan **BS**=Basic Skills

CTE=Perkins Funding (requests restricted to eligible disciplines) **EQ** = Equity **FD** = Foundation

OG = Outside Grant

SPECIAL REQUESTS

The following **Special Request forms** are located toward the bottom of the [IPRP intranet web page](#).

Basic Skills Request due 10/30/2015

Facilities Request due 10/30/2015

Research & Planning Request due 11/9/2015

Technology Plan Request due 10/30/2015

Technology Justification

Sustainability Request

Sustainability Justification

Perkins Spring 2016