

## **PROGRAM REVIEW UPDATE 2016-2017**

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**Program: Welding Technology**

**Division: CATSS**

**Date: Fall 2016**

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**Audience:** Deans, Vice Presidents of Student Services and Academic Services, All Planning and Allocation Committees. This document will be available to the public.

**Purpose:** To document significant program accomplishments, plans and needs between Triennial Program Reviews. This update should provide a snapshot of your program.

**Uses:** This update will be used to inform the campus and community about your program. It will also be used in the processes of creating Dean's Summaries, determining College Planning Priorities and allocating resources.

**Time Frame:** This update should reflect on program status during the 2015-16 academic year. It should describe plans starting now and continuing through 2017-18.

**Topics:** The first section of this Program Review Update focuses on general program reflection and planning. The second, third and fourth sections focus on reflection and planning regarding Student Learning Outcomes. Only instructional programs need to complete Sections 2, 3, and 4.

**Scope:** While this Program Review Update does ask for some analysis of data, detailed data reports in the form of appendices should be reserved for the Triennial Program Review.

**Instructions:**

- 1) Please fill in the following information as completely as possible.
  - 2) If the requested information does not apply to your program, please write "Not Applicable."
  - 3) Optional: Meet with your dean to review this document before October 10, 2016.
  - 4) Send an electronic copy of this form to the Program Review Committee Chair and your Dean by October 10, 2016.
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### **Part One: Program Snapshot**

**A. Have there been any significant changes to your program, your program's data or your program's needs since the previous Program Planning Update?**

If there are any changes, describe the relevant information and its significance in the space below.

These changes might have originated from within the program or because of an external source (the institution or the state, for example). Possible sources of relevant information might include, but are not limited to, the following:

- Data generated by your program
- Data from the Office of Institutional Research (<http://goo.gl/Ssfik2>)
- CEMC Data
- Retirements
- State Mandates
- Labor Market Data
- SLO/SAO Data (<http://goo.gl/jU2yIZ>)

There have been changes within the department since the last reporting period.

Most are continuations of initiatives within the department that will span multiple years. Some of the changes that have occurred:

Continued grant funding to improve the welding program through equipment and other support services

Continued participation in the Diablo Gateway Initiative program to expand regional opportunities for students as well as strengthen our pathways with local High Schools

Continued and expanded use of Virtual Reality skills training for use in increasing student success and engagement.

American Welding Society Student Chapter/ Welding Club formation has increased opportunities for students to interact and connect with the department in new and exciting ways. Our first group of 6 students attended the national manufacturing trade show in Chicago last November, and another group is headed to Las Vegas this fall to attend the same. This outside exposure has really lit the fire of success within the group of students that went, and those that heard of the tremendous opportunity in welding and manufacturing.

Continued roll out laser welding cutting and drilling curriculum and equipment funded through a regional grant

Held a 2-week long Welding Camp during Summer 2015 & 2016 with 25 students from every school district and High School in the Tri-Valley service area. 25% of attendees to the summer camp were female, in a trade that tradition shows little more than 5% female employment as the norm.

Continued the process of updating the departments curriculum, certificates and degrees, continued work with adjuncts in the area of SLO's

Increased employer engagement and student employment opportunities, through field trips and guest speakers.

A new Dean for the program who's focus is on supporting the program and the people that work within it, a 180 degree change. This change has brought about a renewed spirit and sense of motivation within the department.

The welding department faculty has begun participating in ongoing discussions about a potential new student experience in the form of a Creativity Lab or Maker Space. The department has gone off campus and explored parallel sites and similar activities at other places within the bay region. We are hopeful this becomes reality for the enhancements this will bring to our manufacturing processes classes as well as across campus discipline interactions this space could foster.



## B. What objectives, initiatives, or plans from the 2015 Program Review Update have been achieved and how? PRUs from 2015 are available here: <http://goo.gl/9iF3m9>

We have responded to requests to increase FTES counts needed to meet campus goals.

World Class Welding Instruction through Continuous Improvement

Continued use of the American Welding Society - Schools Excelling through National Education Standards (SENSE) instructional concepts. Focus on safety instruction in lab. Extensive use of Welding Procedure Specifications (WPS) and Standardized testing for Midterms and Finals in most courses.

With more than 100 years of combined welding experience, faculty within the department work closely with students to achieve their goals. Welding instruction is unlike any other program on campus, one that combines the visual acuity of an artist, the physical stamina of an athlete, the detailed hand-eye coordination of surgeon, the metallurgy of the entire palate of metals on the periodic chart, the chemistry of high temperature liquid metal interactions with gravity or room temperature diffusion, the concepts of electricity, safety and physics, the mechanisms and machinery of the engineer or architect, the efficiency and productivity of the business manager, the subculture of the welding industry with its uniquely interesting processes, procedures and tools, all combined into the students personal lifelong toolbox. Each student comes to us as an unmolded piece of clay. It is our job to mold that clay into a

finely detailed sculpture that to industry professionals looks like a welder or welding technician. To that end, one of our adjunct instructors received a very prestigious award from the American Welding Society for his instruction expertise, the exact same award a different adjunct professor received last year. Two adjuncts awarded in back to back years. A great feather in the department's hat. The full time instructor renewed his Certified Welding Inspector (CWI) credential this past summer to ensure that the students leave our program with knowledge and certification that meet the demanding industrial requirements. The CWI is the only person that can certify welders, so the CWI plays an important role in certifying Las Positas student welders.

#### **Virtual Reality**

We continue using our virtual reality welding trainer for use in the welding lab and welding classroom. Students are excited to use it and find it a help in the learning process. This is the first type of equipment for welding lab that uses virtual reality so it is not only a learning experience for the students it is also a learning experience for the instructors as well. The new equipment provides new and exciting opportunities for the department. Besides helping students build muscle memory and be able to look at their welds in a different perspective, this equipment also creates an outstanding outreach tool for young people interested in technology. The new equipment has proven a strong tool in working with struggling students that need extra attention or help. In some senses, it could be called a welding tutor.

#### **Laser Welding**

The department has begun to develop a laser welding technology aspect of our instructional technology. This equipment moves the department in the direction of being able to offer more advanced manufacturing opportunities utilized in modern industrial manufacturing settings. As manufacturing becomes more precise and more closely connected with computer technology the laser is a natural extension of the combination of both computers and welding. This is another area where the department has opportunities to interact with other departments such as engineering and computer science. Significant grant funding from BACCC regional

consortium and support from other colleges on a regional basis exist. This technology is also attractive to local industry in the Tri Valley area and beyond. The roll out of this continues as there has been some issues with scheduling and use of the lab area. Students are eager to learn this new technology and add additional skills to their personal toolbox, allowing them to differentiate themselves from students at other colleges. Once fully implemented, there are hopes that this equipment and technology can become used across other disciplines as well. mp for local high school students. 25 students spent two weeks in the welding lab learning about welding, cutting and manufacturing. The summer camp also included a field trip to local industry so that students could see what the modern manufacturing work place looks like. There were students from every high school and a student from every school district in the Tri-Valley community at this high school out reach activity. The students were surveyed after the program and gave it very positive comments. Each student took home a hand made BBQ they made themselves. This program was run in conjunction with tri-Valley ROP. The program also included six female students, an increase of 50% from the year before. Planning for Weld Camp 2017 are underway. We hope to build off of the success of the 2 prior Weld Camps as we continue work to roll out college welding courses at local high schools. The Department filled up the first section ever of a welding class taught in the evening at a high school, in the Spring of 2016. Again this Fall, the department filled up a evening class taught at Livermore High. Our hopes are to break the Livermore High class into a two afternoon class as opposed to a one evening class in hopes of making the class population 100% high school students.

#### **Increased Engagement with Industry**

The department has tried to increase their engagement with industry through a regional collaboration with industry and other colleges. Furthermore we have had companies come out and be guest speakers in the department in an effort to try to attract students to become current or future employees. The unions are also actively engaged in trying to fill the role of their apprenticeship programs. Students have found very nice jobs and gainful employment after completing the program. We continue to reach out and try to engage more with potential industry partners.

#### **Regional BACCC participation**

The department continues to play an important role in the regional community college welding marketplace. The region has met 5 times over the last 2 years to compare notes, engage with industry and work on regional initiatives. For example:

The department has led a regional effort to produce welding inspection curriculum to be trial run at our college and rolled out on a regional basis to other schools in the future. To date the department curriculum has been well received by other schools and its adoption is highly likely by many in the bay area region. There was regional grant funding available to support this activity

In the future, Las Positas has been asked to present on two future topics.

The concept of the Welding Summer Camp, LPC is the only welding program in the Bay 10 districts that is doing anything during the summer to connect with the local high school students.

The concept of teaching a College Level welding class at a local High School. LPC is the only welding program in the Bay 10 districts doing this.

#### **Material Fees**

The materials fees that purchase our raw materials and welding electrodes are key to the students success. Without these materials we would be dependent upon industrial partners to donate material to feed the program. When done in the past this has led to very unreliable supplies of materials and extended effort by personnel within the department to collect and gather. The material fees allow us to purchase standard material that is predictable and reliable so the instructors and students have a better opportunity for success.

#### **Community Service**

The department continues to provide its welding services to people in the community that can benefit from it. This year, as in past years, the department has continued to help the Save Mount Diablo organization with various welding and manufacturing tasks. We worked with students this past summer to earn the Welding Merit Badge from the SF Bay Area Council. We continue to provide service to community members that hear about our program and need our types of welding services. Our current project includes rebuilding of train wheels for the children's train ride at a park in the city of Fremont. The current wheels are worn out due from years of use, but the company that built the train went out of business many years ago. We are building up the worn surfaces with welding, so the original profile of the wheel can be remachined and the old wheel reused for many years into the future. Our department touches many lives whom we will never have an opportunity to meet. This type of work makes students reexamine the value of volunteering for others as a means to making the world a better place to live. We will never be paid for the work, we will receive an opportunity to practice our skills, relate the work to real outside world needs, and help others that need us. The reflection on the effort after it is over, is the most

critical part of volunteering, understanding and feeling pride in the work we do, while helping others. This project has lead to some technical hurdles we had to overcome, but that just added to the learning value.

**C. Discuss at least one example of how students have been impacted by the work of your program since the last program review update (if you did not already answer this in Question B).**

Please see question B

**D. What obstacles has your program faced in achieving objectives, initiatives, or plans?**

There have been challenges with teaching classes at the High School around logistics and transportation of material and gasses to and from the off campus location. Accurate and timely data on actual material fees collected each semester, have room for improvement. Scheduling challenges to bring everyone (Adjuncts and part time Staff included) in the department together. Diffused efforts of Full-Time technical staff due to poor decisions from the previous Dean has left many pieces of equipment in need of TLC to return to operational effectiveness. Efforts to reverse the poor decisions are underway, thanks to efforts from the office of VP Academic Services. Our local storage container that was adjacent to the welding yard for years, was moved to a new location 1500 feet away. Lower enrollments in the Saturday class sections as opposed to classes offered during the week. Bringing adjuncts up to speed with their new duties to help with SLO assessments and other department activities. Students lack of exposure to basic hand tools prior to arriving at LPC. Positive program rapport, as well as general interest in manufacturing in the community has led to an increase in the department's headcount (Many classes running beyond 100% capacity) has led to increases in equipment wear and tear without increases to maintenance budget. Increased lab sections have also reduced the amount of down time available for repairs. While all these issues combine to create challenges, we have outstanding asset utilization for the equipment and lab entrusted to our department to teach our courses. We have responded to requests to increase WSCH/FTES counts requested to meet campus goals while maintaining productivity near 500.

**E. What are your most important plans (either new or continuing) for next year?**

**Prepare students for gainful employment in one of the metal trades, building upon each student's unique capabilities and strengths.**

Provide students with the foundations of safety in the welding workplace

Increase safety in lab environment through deliberate acquisitions of modern equipment

Replace outdated welding power sources with associated equipment

Fully utilize the the electrical expansion project completed last spring by acquisition of additional 220V GMAW/FCAW welding units.

Continue to provide American Welding Society Certification paperwork for students, providing them with credentials that will differentiate them in the welding workplace. Continue to focus on AWS Industry Standard weld testing and guided bend tests

Strengthen the pathway between our program and that at the local High Schools by offering dual enrollment course offerings.

Utilize Virtual Reality skills training as a means to increase student welding skills, increasing safety and conserving materials.

Make laser welding equipment available for students for use in applications to modern industry and advanced manufacturing

Support the LLNL/Veterans Engineering Technician program through courses applicable to the need of the program, support and mentorship of the students

Maintain and improve a safe welding workplace environment

Perform proper college asset stewardship of welding lab equipment Increase use of SLO's in planning , alignment with WELD-ED SLO's  
Increase frequency of assessments and determine their relevance of their results Update and refresh degrees and individual courses  
Pursue Advanced Manufacturing activities including collaboration with other departments on campus to develop a Maker Space / Creativity Lab  
Continue rollout and use of SENSE curriculum and standardized testing  
Increase lab practice time and opportunities  
Increase staff development opportunities for the welding support staff

**F. Instructional Programs: Detail your department's plans, if any, for adding DE courses, degrees, and/or certificates. For new DE degrees and/or certificates (those offered completely online), please include a brief rationale as to why the degree/certificate will be offered online.**

We are in the process of working on DE curriculum for WLDT 61 & 62 lecture only classes. The sole purpose of this is to help students shorten their school day. If we offered the 61 & 62 lectures via DE, the students that currently leave night classes at 10:15pm could go home at 9:15pm. For students that work full time and take evening classes that extra hour is an extra hour they can spend at home with family or use as they see fit.

**G. Do plans listed under Question E or Question F connect to this year's planning priorities (listed below)? If so, explain how they connect.**

**Planning Priorities for 2016-17**

- Establish regular and ongoing processes to implement best practices to meet ACCJC standards***
- Provide necessary institutional support for curriculum development and maintenance***
- Develop processes to facilitate ongoing meaningful assessment of SLOs and integrate assessment of SLOs into college processes***
- Expand tutoring services to meet demand and support student success in Basic Skills, CTE and Transfer courses.***

- |  |
|--|
| <ul style="list-style-type: none"><li><input type="checkbox"/> <b><i>Establish regular and ongoing processes to implement best practices to meet ACCJC standards</i></b></li></ul> |
|--|

Increase staff development opportunities to keep staff current in their roles, and use of technology  
Strengthen the pathway to our program with the local high schools

- |   |
|---|
| <ul style="list-style-type: none"><li><input type="checkbox"/> <b><i>Provide necessary institutional support for curriculum development and maintenance</i></b></li></ul> |
|---|

Support and refine classes to meet the needs of the LPC Welding technology program  
Support and refine classes to meet the needs of the LLNL/Engineering technology program

- |  |
|--|
| <ul style="list-style-type: none"><li><input type="checkbox"/> <b><i>Develop processes to facilitate ongoing meaningful assessment of SLOs and integrate assessment of SLOs into college processes</i></b></li></ul> |
|--|

Increase the use of SLO's in planning and decision making  
Increase frequency of assessments

- |   |
|---|
| <ul style="list-style-type: none"><li><input type="checkbox"/> <b><i>Expand tutoring services to meet demand and support student success in Basic Skills, CTE and Transfer courses.</i></b></li></ul> |
|---|

Increase lab time and time for students to practice skills development

Replace outdated equipment

Use of virtual reality training equipment to increase student success and muscle memory

Continue to offer American Welding Society welding certifications to students that can pass the test

Increase safety in the welding lab through deliberate equipment acquisitions

Aquire new equipment to replace outdated equipment

**H. Instructional programs: Did your program meet its program-set standard for successful course completion? XX yes**

## **Part Two: Course-Level SLO Assessment Schedule**

**THIS SECTION HAS BEEN REMOVED. PLEASE SKIP TO PART THREE.**

## **Part Three: Assessment Results (Instructional Programs Only)**

1. Describe an example of how your program used **course SLO data (SLOs)** from last year (2015-16) to impact student learning or achievement. (Copy the box below if you would like to discuss multiple examples).

|  |
|--|
| Course: WLDT 70 Introduction To Welding  |
| Course SLO: Identify welding electrodes used for common industrial welding processes/applications  |
| Describe the quantitative or qualitative results: 80% Success 20% No Success (Summer 15)   |
| Discuss any actions taken so far (and results, if known): The next time the course was offered, and all subsequent offerings since, a deliberate attempt was/is made to increase the usage of the electrodes and terminology in the class environment. As such, while not input into eLumen, the assessment scores have shown a marginal increase over time. |
| Discuss your action plan for the future:<br><br>More work in this area exists, not only in this course , but others as well.<br>Nomenclature usage and knowledge is a simple indicator to others in our trade the level of training or skill one has in the welding workplace.<br>More and deliberate actions are planned in the area of nomenclature usage. |

2. Degree/Certificate granting programs only: Describe an example of how your program used **program-level SLO data (PSLOs)** from last year (2015-16) to impact student learning or achievement. (Copy the box below if you would like to discuss multiple examples).

|   |
|---|
| Degree/Certificate: Welding Technology AS & Certificate   |
| Program SLO: Demonstrates safety awareness in the welding workplace   |
| Describe the quantitative or qualitative results: 99% Success 1% No Success   |
| Discuss any actions taken so far (and results, if known): We continue to emphasize safety as the first, most important task, of anyone involved with our trade. Safety involves each individual, safety for themselves. Safety involves those around you, safety as a collective environment or team. Safety involves everyone in the shop and building, the role of public safety. Safety involves public confidence, the pride in our work and workmanship may be the difference between success and failure in critical applications such as aircraft, structures, bridges, rotating equipment, radioactive containment, submarines and pressure vessels. We talk about when repair is an option, or scraping the part is the better option with an objective eye on safety. We discuss the ethics behind third party welding inspection and the need to have an objective person make the evaluation of the pass/fail criteria often required in welding codes. |
| ALL students are required to take a safety test created by the American Welding Society's education department. We do extensive pre lab work safety instructions that last for more than the first week of class. Every student is required to take a welding safety knowledge exam before they can start work in the lab. The student is required to take the test with a 100% score. If the student does not pass the test 100% on the first attempt, another attempt is allowed after additional studying. In extreme cases a student may be given a third and final chance after additional one on one instruction with the student/faculty to address areas of significant concern.  |
| Discuss your action plan for the future:<br>The current plan is to continue what we are doing, with the eye on continuous improvement.<br><br>We are glad of the low rate of safety related issues within our department. One area of constant concern and need is to make sure that the equipment we use in all of our CTE programs are safe to use and similar to that in our respective trade, so that students are prepared for the proper workplace environment. Safety by its very nature is a topic of continuous improvement in every facet. When equipment becomes unsafe for use, it is in the best interest of all to upgrade or replace it.   |

Degree/Certificate: Welding Technology AS & Certificate

Program SLO: Demonstrates safety awareness in the welding workplace

Describe the quantitative or qualitative results: 99% Success 1% No Success

Discuss any actions taken so far (and results, if known): We continue to emphasize safety as the first, most important task, of anyone involved with our trade. Safety involves each individual, safety for themselves. Safety involves those around you, safety as a collective environment or team. Safety involves everyone in the shop and building, the role of public safety. Safety involves public confidence, the pride in our work and workmanship may be the difference between success and failure in critical applications such as aircraft, structures, bridges, rotating equipment, radioactive containment, submarines and pressure vessels. We talk about when repair is an option, or scraping the part is the better option with an objective eye on safety. We discuss the ethics behind third party welding inspection and the need to have an objective person make the evaluation of the pass/fail criteria often required in welding codes.

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Discuss your action plan for the future:

The current plan is to continue what we are doing, with the eye on continuous improvement.

We are glad of the low rate of safety related issues within our department. One area of constant concern and need is to make sure that the equipment we use in all of our CTE programs are safe to use and similar to that in our respective trade, so that students are prepared for the proper workplace environment. Safety by its very nature is a topic of continuous improvement in every facet. When equipment becomes unsafe for use, it is in the best interest of all to upgrade or replace it.

## **Part Four: Program Curriculum Map**

1. Did you make any changes to your existing mapping? (circle one)

**Yes**

2. If you answered "yes" to Question 1, explain what changes you made.

In the process of completing the map this year, I came to realize that our lecture classes, while very important in the learning process, were not mapped to the program SLO's. All of the 17 WLDT department courses have 2 or more SLO's for them, our lecture classes for the Certificate and AS were not mapped to program outcomes. As such, I have listed a new ( pending SLO committee approval ) Program Outcome on this mapping.

I added a new one that reads :

"Demonstrates knowledge and usage of American Welding Society (AWS) nomenclature, symbols and acronyms."

I think I now have captured a missing link in the SLO map of the welding department linking the lecture courses to the program outcomes. While this linkage shown here is primarily the certificate , the same will exist in a parallel way with the AS degree. This was the missing slice in my "SLO Pie". As a matter of consistency it seems logical that every class has some connection to the outcome of the degree or certificate. My existing program level outcomes covered well the lab and practical side of our teachings. The added program level outcome make our SLO map more well rounded. The pie is not missing a slice.

Degree or Certificate: **Welding Technology Certificate of Achievement**

| Program Learning Outcomes (3-6 recommended)   | Required Courses in Degree/Certificate |       |      |       |     |      |      |       |    |     |     |  |  |
|---|--|-------|------|-------|-----|------|------|-------|----|-----|-----|--|--|
|   | 61 A                                   | 61 AL | 61 B | 61 BL | 62A | 62AL | 62 B | 62 BL | 63 | 67A | 67B |  |  |
| 1. Demonstrates safety awareness in the Welding Workplace   |  | X     |      | X     |     | X    |      | X     | X  | X   | X   |  |  |
| 2. Demonstrates the skills required to pass an AWS standard industry welding certification test   |  | X     |      | X     |     | X    |      | X     |    | X   | X   |  |  |
| 3. Demonstrates knowledge and usage of AWS standard nomenclature, symbols and acronyms ( pending) | X                                      |       | X    |       | X   |      | X    |       | X  |     |     |  |  |

3. Reflection Questions: The following questions are for the consideration of your program as you look at your completed chart. You do not need to record your responses here. If you discuss these questions with others (for example, at a department meeting), you may want to take minutes documenting your discussion.

- a. How many courses help students achieve each program outcome? Do students have enough opportunities to achieve the outcome?
- b. In which course(s) are students likely to demonstrate satisfactory achievement of each program outcome? In other words, which courses(s) might be an official or unofficial capstone requirement?