PROGRAM REVIEW UPDATE 2015-2016

Program: Welding Technology

Division: STEMPS

Date: Fall 2015

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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.*

Time Frame: *This update should reflect on program status during the 2014-15 academic year. It should describe plans starting now and continuing through 2016-17.*

Topics: *The first section of this Program Review Update focuses on general program reflection and planning. The second and third sections focus on reflection and planning regarding Student Learning Outcomes.*

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 "No Changes Since the Program Planning Update."*
3) *Send an electronic copy of this form to the Program Review Committee Chair and your Dean by ____.*

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.

There have been changes within the department since the last reporting period. Some of the changes that have occurred:
Received grant funding to improve program through equipment and other support services
Participant in the Diablo Gateway Initiative program to expand regional opportunities for students as well as strengthen our pathways with local High Schools
Introduction of Virtual Reality skills training for use in increasing student success and engagement
Welding Club formation to increase opportunities for students to interact and connect with the department.
Began the process to 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 with 25 High School students from every school district and High School in the Tri-Valley
Began the process of updating the departments curriculum, certificates and degrees
Increased employer engagement and student employment opportunities

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B. What objectives, initiatives, or plans from the 2014 Program Planning Update (PPU) have been achieved and how?

World Class Welding Instruction - Continuos 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. One of our part time instructional assistants also achieved the level of Certified Welding Inspector (CWI) joining the Full Time instructor so that the program now has two CWIs on our LPC campus. The CWI is the only person that can certify welders, so the CWI plays an important role in certifying student welders.

Virtual Reality

We have begun using our new 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. It is too early to tell what the actual impact of the equipment is but it's safe to say it will be positive in many regards.

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.

Engineering Technology

The LPC/LLNL Engineering Technology career Pathway for Veterans contains four Welding Technology courses are part of the 2-year cohort based program. We are in the second year of cohort 1 and the

first year of cohort 2. Welding interacts with 40 students weekly from this growing and important LPC program. These courses help broaden the reach of the welding program as an important facet of another department.

Community Service
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. This year we helped to make trail identification markers that help tell the story of the natural area the hikers were passing through. This was also part of an Eagle Scout service project that a young gentleman did for the good of his community and the welding department was glad to have partake in a pivotal role to help the student manufacture his hardware.

Outreach to High Schools
The department for the first time, in the summer of 2015 held a welding camp 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 the made themselves. This program was run in conjunction with tri-Valley ROP. The program also included four female students. Planning for Weld Camp 2016 are underway. We hope to build off of the success of the Weld Camp as we roll out dual enrollment courses at local high schools.

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 Curriculum Support
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 it's adoption is highly likely by many in the bay area region. There is regional grant funding available to support this activity. The updated course curriculum for welding inspection and testing will be forwarded to the curriculum committee in the not-too-distant future.

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.

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

Lab Space
It would always be nice to have a larger lab. Additional space would allow for additional equipment that would lead to different and varied student opportunities. There's always tension in the lab as to what equipment to keep what equipment to dispose of and what do we need in the way of new equipment. Because the

lab has a finite volume we must become creative in the ways that we use the lab and space inside of it. We also need to utilize the area that we have access to in the central tool room to the best of its ability as well. Because of the value of the assets within the lab it is important that we maintain control of it and care for it in the proper manner. Additional space for laser welding, welding inspection or other advanced manufacturing activities would be great. A covered outdoor yard would also better utilize the space that we currently have at our disposal.

Time in the Day

Currently the welding program is utilizing much of the time available in the afternoon evening and weekend hours to teach students inside of our one welding lab, room 810. Besides the afternoon and evening, day classes fill up three of the five days each week. As such there is only time during the day on Monday and on Friday or Sunday available for teaching additional courses. The program has experimented with Friday night courses successfully in the past and may want to consider that in the future. Staffing a Friday night class that runs until 10 PM can sometimes become a problem.

Available Technician time to work on equipment.

The welding laboratory is currently open more than 40 hours per week for lab learning opportunities. Even if we said there was an average of 24 students per class that works out to more than 800 student lab hours per week. The lab technician currently only has 10 hours per week to try to maintain the laboratory that has that level of volume of students passing through it each week. Without the necessary level of lab stewardship the extensive investment by the college for the welding equipment is being sacrificed. To maintain the lab at the satisfactory level additional lab hours for equipment repair and maintenance are needed by the lab technician.

Communication

Communication within the department and between the department and the division office has room for improvement. Electronic communications, oral instructions and written communications are all areas that can be improved. Work to improve these areas will reap great rewards in satisfaction and respect from students, faculty, staff and administrators.

Materials Fees

Timely reporting of material fees collected could help streamline the process of procurement. It has always been difficult to extrapolate the actual money collected in a timely fashion. Being able to capture that number and understand what it is earlier in the semester then currently occurs will aid in purchasing materials for the current semester. Work between the department, the business office, A & R and the division office needs to occur. A best practice for how this is done should be developed to ensure a seamless and timely procurement cycle. Last, but by no means least, the cost of materials as well as department supplies continue to increase.

Engineering Technology

The ever-changing student support specialist person has created challenges keeping some of the students on track and moving in the right direction. Creating a class schedule that works for both students and faculty is also a critical role. Additional interaction between department faculty that teach the different disciplines that service this program is important and desired.

D. 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
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
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

E. Do plans listed under question (D) connect to this year's planning priorities (listed below)? If so, explain how they connect.

Planning Priorities for 2015-16

- ***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.***
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F. Instructional programs: Did your program meet its program-set standard for successful course completion? X yes _____no

(This data can be found here: http://goo.gl/y9ZBmt)

If your program did not meet your program-set standard, discuss possible reasons and how this may affect program planning or resource requests.

N/A

- ***Establish regular and ongoing processes to implement best practices to meet ACCJC standards***

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.

Make laser welding equipment available for students for use in applications for modern industry and advanced manufacturing. This an improvement to our existing and is consistent with continuous improvement and internal reflection. Increase lab practice time and opportunities as a means to increase student success.

- ***Provide necessary institutional support for curriculum development and maintenance***

Prepare students for gainful employment in one of the metal trades, building upon each student's unique capabilities and strengths using existing, new and improved course material.

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

Support the LLNL/Veterans Engineering Technician program through curriculum that meets the need of the program, support of the students.

Update and refresh degrees and individual courses through an ongoing basis.

Pursue Advanced Manufacturing activities and develop new curriculum as needed.

- ***Develop processes to facilitate ongoing meaningful assessment of SLOs and integrate assessment of SLOs into college processes***

Provide students with the foundations of safety in the welding workplace. Operating safely in a welding workplace environment is a department SLO. Maintain and improve on the existing safe welding workplace environment. Increase use of SLO's in planning , alignment with WELD-ED SLOs.Increase frequency of assessments and determine their relevance of their results

- ***Expand tutoring services to meet demand and support student success in Basic Skills, CTE and Transfer courses.***

Strengthen the pathway between our program and that at the local High Schools by offering dual enrollment course offerings. Provide the necessary support to see that the students succeed.

Perform proper college asset stewardship of welding lab equipment so that it is ready to go when students need it. Continue rollout and use of SENSE curriculum and standardized testing for all students so that tutoring can be more effective and directed. Increase staff development opportunities for the welding support staff so that they can provide deeper relationship with the learning process and the lab they support.

G. How have students been impacted by the work of your program since the last Program Planning Update (PPU)?

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.

The materials fees that purchase our raw materials and welding electrodes are key to the students success. 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.

Provided service learning opportunities through the use of community service and fabrication for others that can use our skills and abilities to complete their goal or task. The students have a great sense of satisfaction when they see others benefit from their newfound skills and abilities.

The students have felt much more connected and engaged with the department after we started the welding club. The club has become a refuge for many students that want to use their skills in a different way than what we normally do in class. It gives the students bonding time with other welding students outside of the normal classroom or laboratory environment. Student retention within the department has remained above 85%.

Students have continued to build their skills and prepare themselves for industry standard welding certification tests. Look apartment continues to provide opportunities outside of the classroom environment to perform welding test that lead to industry recognized welding certification documents.

Part Two: SLO/SAO Assessment Review

Review your program's SLO assessment results for AY 2014-2015 and respond to the following questions.

A. Discuss how assessment results in at least one course in the program indicate success in student learning (OR) Discuss how assessment results of at least one SAO in the program indicate success in service to students.

WLDT 71 Welding for the Arts
This course has two SLOs written and assessed each semester. They focus on safety and materials identification.
During Summer 14 and Summer 15, 100% of students achieved success in the area of safety and 86.9% achieved success in the area of metals identification. We will continue to take our "Safety First" approach to everything we do and create a safe workplace for all. We continue to strive to make every student consider Safety as a way of life if they are planning to be around welding for any period of time. Additional practice of material identification should be had to improve those scores.
WLDT 70 Intro to Welding
This course has two SLOs written and assessed each semester. They focus on safety and electrode identification.
During Summer 14 and Summer 15, 97.5% of students achieved success in the area of safety and 82.5% achieved success in the area of electrode identification. We will continue to take our "Safety First" approach to everything we do and create a safe workplace for all. We continue to strive to make every student consider Safety as a way of life if they are planning to be around welding for any period of time. Additional practice of electrode identification should be had to improve those scores.

B. Discuss assessment results that indicate a need for improvement.

We always want to increase our success rates on our industry standard welding tests. This is the culmination of the skills efforts for students. Currently about 80-85% of students show success, but we want to improve on that. Safety is something that we can always get better at. We continue to make safety in the shop a personal priority for everyone, and our collective efforts are required to make that a success.

C. Instructional Programs: For the course(s) listed in (B) above, discuss how your program, or someone in your program, made changes or plans to make changes in pedagogy as a result of SLO assessment results.

Non-Instructional Programs: For the areas(s) listed in (B) above, discuss how your program made changes or plans to make changes as a result of SAO assessment results.

The instructors in the department have been trying to introduce the mock testing earlier in the semester. In the past, other joint configurations as well as increased variety and different electrodes or filler materials would have been used. Focus on the more difficult tasks and spending more time on those should show increased success. The ability to provide more material in a "ready to weld" format will also increase success.

This concept is especially true in the pipe welding classes where the total time from prep to complete weld can be from 6-12 hours of lab time depending on the position, diameter and wall thickness. The lab final exam for the pipe welding classes typically takes 2 weeks(6 hrs/each) to complete. As such, practice time is critical to ensure success. Increasing time working on the most difficult aspects is where the effort should be spent. The idea is, if you can weld the hard part, you can weld the easy part. Focus on the hard part, the easy part comes along by default.

D. Instructional Programs Only: Give an example of a change in the number of units and/or lab hours based on assessment data, if applicable.

N/A

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A.

E. **Instructional Programs: Discuss how distance education course assessment results compare to face-to-face courses, if applicable. (*Respond to this question if your program has distance education courses*.)**

Non-Instructional Programs: Discuss how SAO assessment results for online services compare to face-to-face services, if applicable. (*Respond to this question if your program provides services online*.)

N/A

F. **Did your program discover the need for additional resources (for AY 15-16 or 2016-17) based on the assessment results?** YES X NO ☐

If yes, please explain.

We need to make more welds in lab classes to increase our success rate on industry standard tests. To make more welds requires an incremental increase in the amount of compressed gasses (Argon, Carbon Dioxide, Oxygen, Acetylene) that we use. Furthermore, the commodity cost of the gasses continue to increase as well.

To stay current with our goal to certify student welders, we need new American Welding Society Code Books as the old ones have been revised.

We also have have begun to see the value and importance the virtual reality welding system. While the machine does a great job augmenting the training in the normal welding lab environment, only one machine limits access to the technology in a class of 24. As such, it would improve the student experience significantly by having an additional unit.

As manufacturing increases dependency on automation, robotics are becoming the area of real importance. Robotics are something that is becoming commonplace in many welding environments. As such, the program should pursue some robotic welding, in conjunction with the engineering and computer science departments.

Part Three: SLO/SAO Continuous Improvement Process

A. SLO Planning through AY 2016-17

As appropriate for your program, please address each of the following areas. For each area, describe your program's plans starting now and continuing through the academic year 2016-17. Focus on how the program's SLO process will impact student learning or the student experience at Las Positas College.

1. SLO/SAO assessments: How does your program plan to use assessment results for the continuous improvement of student learning or services? (*NOTE: 100% of courses in your disciplines should be assessed a minimum of once every two years. Each program must assess at least 25% of its courses every semester. Programs with SAOs should assess at least 50% of their SAOs every year*).

   Examples might include (Your responses may vary.):
   - changing number of units/lab hours
   - changing pedagogy/curriculum
   - changing assessments
   - changing service hours
   - changing modes of service delivery

Our program plans to use evaluating the data from SLO assessments, instructor's observation and experience from the classroom or lab environment as well as the achievement level of our students on standard industry tests to make adjustments. All the instructors and staff meet once a semester, near or before the outset, and reflect on the past semester or year. Any adjustments or a change to our teaching/learning strategy is agreed upon at that time. This discussion also includes similar course sections taught by different instructors and plans to keep what we do consistent across all sections, to all students. Our most recent discussions involved the use of virtual reality in the lab environment, dual enrollment with local high schools, as well as laser welding. We use American Welding Society Specification EG 2.0 – 2006, *Guide for the Training of Welding Personnel: Level 1 Entry Welder* as a basis for what we do.

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2. Have your assessment results shown a need for new/revised SLO/SAOs? YES ☐ NO X

   If yes, complete the table below:

Estimated number of courses for which SLOs will be written or revised:	
Estimated number of SAOs that will be written or revised:	

a. What courses or SAOs will your program assess during this academic year (2015-16)?

The student learning outcomes that will be assessed are as follows:

1) Safe Operation in the welding workplace environment

2) Pass an industry recognized welding certification test

These assessments will occur in the following courses:

WLDT 61 AL
WLDT 61 BL
WLDT 62 AL
WLDT 62 BL
WLDT 68
WLDT 69A
WLDT 69 B

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a.

b. Instructional programs only: In order to budget to pay part-time faculty to work on SLOs during the academic year 2015-16, estimate the number of part-time faculty in your program who are likely to participate in the SLO process in 2015-16.

Number of Part-Time faculty who will participate in the SLO process (creating, assessing or discussing SLOs)	
Fall 2015	4
Spring 2016	4