

Program Overview	
PR Area	Academic Affairs
PR Division	Industry & Technology
PR Program	Welding
Review Type	Academic Affairs
Year	2012
Program Overview Narrative	
The mission of the welding department is to maximize the ability of its students to compete in today's job market. To achieve this goal, the department emphasizes current technology trends in both the welding shop and the classroom environment. The Department of Labor and Statistics estimates an insurgence of need for highly competent skilled welders or as they refer to them, Weld Technicians. There is such a high level of concern in filling the need for the 580,000 well trained, workforce positions that will be opening up to the year 2014, that the National Science Foundation is funding a program of training the Trainers, offering Weld Ed as a resource for instructors to be exposed to the current requirements expected of Weld Technicians. The American Welding Society (AWS) reflecting on the average age of their members estimates 280,000 positions will be opening up for skilled welders due to retirement alone. This makes it only more imperative that our welding department adapts to meet diverse student needs and respond to changes in the welding industry. Our students must be comfortable to operate equipment commonly used in metal fabrication with the ability to assess their job assignments and apply critical thinking to complete their task. Skilled job opportunities are coming back from China and Mexico since companies have found overseas production to be more costly in mistakes than having the work done in the US. National Skills, USA says that manufacturing in the USA is the 8th or 9th most important economy in the world. They are stressing the need for workers capable of leadership skills and qualities. Manufacturers Alliance for Productivity and Innovation revealed that there is twenty years of growth in the Aerospace market and US manufacturing assessment states the market will outlast the projects that are booked until the year 2028. Gas Tungsten Arc Welders (GTAW) and people with their AWS D1.1 LA City Certification fall into the category of workers that are needed to fill this supply. I have had seven students acquire employment from Ace Clearwater, Mayekawa, Aero Arc, Triumph Vought, and the Local 250, Pipe Union. Several other students are waiting to hear from job applications sent to Space Ex, Burlington Northern Santa Fe, and the various refineries. Both Compton and ECC's Weld Department are currently rewriting the curriculum in our program to include more certificates to reflect the number of lab hours student puts into different techniques and an eight week program to decrease the time they need to complete an Associate's Degree. Two of my students will be completing their AS this fall. We have approximately 140 students currently enrolled at ECC and we will be looking into accommodating for the growth that is expected. We are involved in a grant funded program, the Career Advancement Academy, which involves cohort teaching and contextualized learning. Math and the ability to communicate are extremely important to advance in a career as a Weld Technician. I am excited	

about the future changes that will come from our learning curve in approaching construction trades with this concept. Alcoa like many other manufacturing companies are paying students as interns to go back to school. Their CEO says “what makes a business or country competitive is innovation backed by a skilled workforce.” We need to reach out to the welding industry and offer the training they need to hire our students. What I’ve found is an overwhelming response to the AWS D1.1 LA City Cert will open the door to most employment. Aerospace is a concentration on GTAW welding where the students need enough lab time to pass a series of thin gauge tubing to sheet, x-ray quality test.

Status of all active Recommendations

We are currently trying to get our shops machinery operational so that the students are exposed to general fabrication equipment. Knowledge is power and the companies offering paid internships for training want to know what kind of hand tools and weld joint fit-up and fabrication equipment the students know how to operate.

A ceiling mounted video projector was installed. New Tungsten Inert Gas Welding machines and Arc welding machines will be completely installed summer 2012. I am resubmitting my request for a new computer for the lecture room and my office. Our lecture room computer has broken down twice this year and we need the ability to draw on power points with a sketching component offered in the specialty computer.

Part 1: Review of the past four years

Research Data Analysis

Research Data Analysis Narrative

The weld department is at capacity with regard to current enrollment, turning away at least 30% of students wishing to enroll in a weld class. We are offering 19 units as part of our regular load and 6 units offered through our Career Advancement Academy (CAA) program. Attendance consists of 6.5 percent female and 93.5 percent male students during the period from 2007 through and including 2012. 57.1 percent of students attending welding classes in the daytime, 42.9 percent attend at night-time. These statistics are consistent with students who have jobs during the day and attend school at night. We may have to look at offering more night classes to accommodate the students that are currently in the work force looking to improve their skills set or pass a weld test to increase their base pay.

The largest age groups, 49 percent of students, are between the ages of 20 and 29 years old. This is a perfect demographic for the requirements the companies are looking for. The 15 percent of people over 40 enrolled in our program are either looking to improve their base pay by passing a plate groove test or are enrolled in our Gas Tungsten Arc Welding (GTAW) program in the hopes of going into aerospace where there isn’t the physical strength needed as there is in pipe welding or iron workers. As stated in my earlier review the opportunities for skilled welders will be vast. Presidential candidates had high skilled jobs coming back from Asia as one of their talking points. Tesla and Space Ex are bringing everything in house. Paid

internships are now coming to fruition for companies willing to make an investment, seeking to train individuals in the trade they're looking to fill. With this are aptitude test (math & english), interviews for attitude, and to be able to evaluate whether their new hires will show up to work on time.

We need to increase our certificate program. The changes recommended in the curriculum program will assist in attaining this goal.

Curriculum

Curriculum Narrative

We have split the lecture/ lab component of Weld 23 to offer separate classes on the D1.1 Los Angeles City Certification in Structural Steel. Weld 28 is now the lecture/preparation test component and Weld 23 is the lab/practical component that focuses on the 3G and 4G practical exam. Unfortunately, we are not able to offer these in a repeatable “abc” format. These individual tests really merit a repeatability format since they are such high level tests and are not easily passed on the first try.

We need to increase our certificate program. The next change we will be implementing to avoid different levels of students repeating the same class as in the “abc” format is completely rewriting our curriculum into 8 week classes as well as offering 16 week classes. This will assist the student through our program in a more efficient manner. Our certificates will try to reflect the time spent in the welding lab and work as a tool on their resume. To give an employer state of mind when he wants two to five years experience but the student is capable of passing his entrance exam. The changes recommended in the curriculum program will assist in attaining the final goal of employment, including making Compton an approved testing site for the LA City Cert practical exam. The interactions that I have had with people hiring in our industry, the D1.1 LA City Cert would guarantee employment. This certification should be the crowning glory of our students completing the program. If they can obtain this before finishing the program it is an asset to their welding skills and they should be taking advantage of the opportunities being offered in a high paying job—\$60,000/year or starting at \$18 to \$28/hour

Assessments of Student Learning (SLO)

Assessment of Student Learning Narrative

A) Courses - Our courses are not limited to, but usually are divided into lecture and lab.

The lecture classes are evaluated based on the retention and final assessment of the materials as presented through the course of the semester. This includes, but is not limited to, materials presented by text, video, and lecture notes. The lab classes are evaluated based on the retention of material presented in lecture but include hands on troubleshooting and weld bead inspection.

B) Program - The program is validated in terms of students learning outcomes based on the ability of students to successfully complete the degree or certificate program. In the past there has not been enough consistency in documenting SLO's to compile evidence that his program

was run correctly. I can say that job placement in the welding industry would be our number one goal and the most important way to assess the program. This is a sustainable way to evaluate whether our program is preparing students to perform the duties expected from them in the welding industry and have the skills to advance. As part of my ongoing assessment, I am documenting the companies that are hiring our students.

C) All courses in the welding program rate high in content knowledge, critical, creative and analytical thinking as the core competency. Students need knowledge and troubleshooting skills in the trade to make good judgments in the field. I am looking to align our curriculum with institution practices in fabricating and weldments. I view our SLO's in welding as a systematic and continuous organizational improvement towards obtaining employment in the weld industry.

D) A review of assessments reveals that not all instructors are using the SLO assessments in the way they were intended. Continuing to address the needs of the program in terms of curriculum development, future modifications of course offerings to comply with the changes incorporated in the field of welding and industry standards need ongoing upgrades in our process. My program needs to fine tune the evaluation system to support the needs industry will be calling for. We will evaluate on hand tool usage as well as structural fabrication equipment knowledge for joint set up and weld techniques. I am in the process of rewriting our curriculum and updating the SLO requirements for each class. I am making improvements by rewriting the rubric for a better fit.

ACCJC Rubric

Sustainable Continuous Quality Improvement

Describe how well the assessment process works within your program and justify the rating you gave the assessment work in your program.

Based on the rubric for Student Learning Outcomes, the weld program is at the continuous quality improvement stage. The program needs to link the learning outcomes to the program reviews. Student learning improvement is a visible priority to our department and fine tuning it to relate to Industry requirements is our number one goal. Job placement and quality word of mouth referrals will be a reflection of our aligning ourselves with student success.

Facilities and Equipment

Facilities and Equipment Narrative

Welding tools and equipment should be equivalent to what is currently being utilized in the welding industry. This is of great benefit to welding students since it allows them to develop the proper skills in order to be successful in the welding trades. In addition, technology must be incorporated into the lecture environment. Prepping the student for practical exams that further their careers, including contextualized learning that help them with logical thinking. Students must have the aptitude to understand the operation of equipment as well as the techniques used for welding. Companies are seeking high skilled welders to fill the positions they have open. High tech and high precision jobs are the ones that are coming back from the ones out sourced to China.

It is imperative that we get our metal working equipment working in the shop area. Much of this

equipment was laid to rest and not considered pertinent in the past instructors curriculum. Today's job requirements are looking for a welder with knowledge in machine tools. The machinery that the students are being exposed too is used daily in the field. A student's knowledge of hand tools and iron working equipment is essential to acquiring the title of Weld Technician.

Most students are visual learners and as such need to see demonstrations of welding procedures. When the instructor demonstrations provided during class are not adequate for some students, or a student wishes to practice previously learned skills, tutorial instructions on DVDs are of great benefit to students. A computer with drawing capabilities is desperately needed for the lecture room and a demonstration area equipped with various welders would be an asset. We also need to install our new coupon cutting/bending machine before the warranty wears out while waiting for the new building. Other machines that were not correctly installed have had issues that we could not rely on the warranty to fix because the machine wasn't connected during this time period.

Technology and Software

Technology and Software Narrative

The program will be implementing a blue print class that needs a computer that has a chalkboard capability to draw lines and alter blueprints on a large screen. This will cost approximately \$3500 plus we need one more in the office area. We are also constantly updating our DVD selection for visual performers approximately \$1,000/yr.

Staffing

Staffing Narrative

Currently, we are addressing our staffing needs by hiring two adjunct instructors. The weld department needs to hire another full time instructor to support growth in our program. Within the next 2 years the weld shop will be moving into our new facility that is more compact. The new facility can accommodate two separate lab classes offering Gas Tungsten Arc Welding and Shielded Metal Arc/ Flux Cored Welding to cover the growth we will need to provide our community. Long range, I would like to restructure all abcd classes to 4 units, giving me the ability to offer eight week classes within a semester, making our program more certificate friendly. A full-time faculty member will cost approximately \$80,000.

Long range goals will be accommodated with two full-time faculty. With the boom in hiring for aerospace, we should deconstruct Weld 40 abcd into four separate classes to focus on training our superior Gas Tungsten Arc welders into an aerospace weld technicians that can pass the grueling test required for entrance into our major aerospace producers located in the Southern California area. There will be a lab only component to this change. If our program is allowed more growth, we will seek out adjunct faculty to fill in the voids.

Career and Technology Education (CTE)

How strong is the current occupational demand for the program?

Current occupational demand for Weld Technicians is expanding rapidly due to large construction projects coming down the pipeline and estimated retirements. According to the Federal Bureau of Labor Statistics there are 580,000 jobs opening up into the year 2014. The American Welding Society projects an additional 280,000 jobs becoming available in the next couple of years, based on the fact that the average age of certified welders is 54 years old working in skilled positions. The optimal adjective is “skilled.” The National Science Foundation supports the 580,000 positions will be available for skilled welders and are supporting the Weld Ed program to make sure we have the Weld Technicians that will be needed in the next couple of years.

Our students must be comfortable to operate equipment commonly used in metal fabrication with the ability to assess their job assignments and apply critical thinking to complete their task. Skilled job opportunities are coming back from China and Mexico since companies have found overseas production to be more costly in mistakes than having the work done in the US. National Skills, USA says that manufacturing in the USA is the 8th or 9th most important economy in the world. They are stressing the need for workers capable of leadership skills and qualities. Manufacturers Alliance for Productivity and Innovation revealed that there is twenty years of growth in the Aerospace market and US manufacturing assessment states the market will outlast the projects that are booked until the year 2028. Gas Tungsten Arc Welders (GTAW) and people with their AWS D1.1 LA City Certification fall into the category of workers that are needed to fill this supply.

Both Compton and ECC's Weld Department are currently rewriting the curriculum in our program to include more certificates to reflect the number of lab hours student puts into different techniques and an eight week program to decrease the time they need to complete an Associate's Degree. Two of my students will be completing their AS degrees this fall. We have approximately 140 students currently enrolled at ECC and we will be looking into accommodating for the growth that is expected. We are involved in a grant funded program, the Career Advancement Academy, which involves cohort teaching and contextualized learning. Math and the ability to communicate are extremely important to advance in a career as a Weld Technician. I am excited about the future changes that will come from our learning curve in approaching construction trades with this concept. The next 5 years will be crucial to the training of skilled welders to step into the advance positions opening up in the aerospace, transportation and construction technologies.

What is the district's current need for the program?

The need for people to fill these skilled welding positions are apparent. Companies are scrambling to find the technicians needed to keep their production moving or they are creating paid internships to train them. Currently, aerospace companies such as Ace Clearwater and Honeywell are trying to find enough Gas Tungsten Arc welders to accommodate the new orders in progress. Burlington Northern Santa Fe are looking to hire 18 welders where they are going to train in Kansas City to fill their employment voids. The weld department at El Camino

College should be ready to train this next generation of welders. We are updating our Structural Fabrication class and introducing a blue print reading class into curriculum. I am actively involved with the Weld Ed program, as well as doing additional training with Lincoln Electric, who is a sponsor of Weld Ed.

Our courses tend to overfill and we are limited by the number of booths we currently have available. We should offer more classes to accommodate the growing need for weld technicians. Alcoa like many other manufacturing companies are paying students as interns to go back to school. Their CEO says “what makes a business or country competitive is innovation backed by a skilled workforce”. We need to reach out to the welding industry and offer the training they need to hire our students. What I’ve found is an overwhelming response to the AWS D1.1 LA City Cert will open the door to most employment. Aerospace is a concentration on GTAW welding where the students need enough lab time to pass a series of thin gauge tubing to sheet, x-ray quality test.

What is the state's current need for the program?

The state has many projects with their metro systems, rebuilding bridges and reconstruction of highways that will require highly skilled welders. To achieve this goal, they need trained welders. El Camino College offers a program that applies principles of welding to the practical techniques needed to build their skills. Our program is aware of the need for weld technicians and we are updating our curriculum to keep abreast of the new technology and training methods.

Local 250, pipe welders and boilermakers union is looking to hire 1800 people into their apprenticeship program to gear up for the business they’re getting from building the new football stadium and hotel contracts downtown, to the “Fragging” pipeline from South Carolina. Our students must be comfortable to operate equipment commonly used in metal fabrication with the ability to assess their job assignments and apply critical thinking to complete their task. Skilled job opportunities are coming back from China and Mexico since companies have found overseas production to be more costly in mistakes than having the work done in the US. National Skills, USA says that manufacturing in the USA is the 8th or 9th most important economy in the world. They are stressing the need for workers capable of leadership skills and qualities. Manufacturers Alliance for Productivity and Innovation revealed that there is twenty years of growth in the Aerospace market and US manufacturing assessment states the market will outlast the projects that are booked until the year 2028. Gas Tungsten Arc Welders (GTAW) and people with their AWS D1.1 LA City Certification fall into the category of workers that are needed to fill this supply. The refineries are hiring 1000 people for “hot” watches and contained safety watches. Most of the refineries are looking for skilled welders that can pass the 6G pipe test. The D1.1 will get you hired to do fit-up and tacking. Brinderson refinery will hire you to do the cover passes on their pipe if you have your D1.1 LA City certification and will pay for you to take your 6G at Accurate Testing for the root pass.

How does the program address needs that are not met by other similar programs in the area?

El Camino College serves a diverse community composed of numerous special populations that are served by having the use of modern welding equipment and awareness of the market needs. Industry is looking for weld technicians. The welding faculty is attending training sponsored by the National Science Foundation, Weld Ed, to be advised on what Industry is expecting from our

graduates and the impact we have as educators. We are involved with the Career Advancement Academy to introduce welding to an "at risk" population of youth and seek out "natural" talent. We work with the Women in Industry and Technology program to increase the weld department's exposure to women in the trades.

We are looking at introducing a nondestructive testing class to open other opportunities for students who wish to go into weld inspection. Because weld inspection goes hand in hand with any type of critical weldments and inspectors need to have at least two years welding experience. We are also working with Compton College to get approval for a testing center for the practical exam of 2G, 3G or 4G testing.

Are the students satisfied with their preparation for employment? Are the employers in the field satisfied with the level of preparation of our graduates?

Our advanced students are finding jobs in the job market. Eight students during this semester have acquired employment from Ace Clearwater, Mayekawa, Aero Arc, Triumph Vought, and the Local 250, Pipe Union. Many of my Gas Tungsten Arc Welders and Shielded Metal Arc Welders are being employed, hired to practice all day to pass the D17.1. We focus our attention on certification and preparing for interviewing exams. El Camino has many industrial connections that consider our students for employment. The welding curriculum is focused on improving the education of our students to reflect the skills needed to excel in industry and the employers are appreciative of that fact. Many of the new classes that will be introduced into the curriculum will improve on student satisfaction, as well as their future employers.

What are the completion success and employment rates for the students?

Our field does not require an Associates of Science to gain employment. I have two students who should finish their Associates of Weld Technology this fall. I believe our success rate should be based on employment. I am active in sharing information on job opportunities and have a success rate of approximately 30%. Acquiring the AWS D1.1 LA City certification would be another standard to rate our students success. Currently in the job market, I would see no reason someone with this qualification not to be gainfully employed. I am trying to establish a format to document our student's rate of employment due to the experience they have received in the lab.

I have eight students employed this semester to work at Ace Clearwater, Mayekawa, Aero Arc, Triumph Vought, and the Local 250, Pipe Union. Several other students are waiting to hear from job applications sent to Space Ex, Burlington Northern Santa Fe, and the various refineries.

What impact does the advisory board have on the program?

The advisory board is used to exchange and gather information, many of the questions posed result in new innovation and respond to employment needs. We are looking to build our membership to reflect all the welding techniques used in the field. We use members of the board for additional information of equipment and state of the art training. We are looking to increase our coverage of companies participating on our board.

Part 2: Future Direction

Direction and Vision
Direction and Vision Narrative
The direction of El Camino's welding program will be the certification of our students to prepare them for industry. We are updating our curriculum to reflect the need for skilled, weld technicians. Our department is working with other relevant construction technologies departments to strengthen the students' in the field experience in structural fabrication. We are expanding our views on cohort teaching with our Career Advancement Academy. The vision for the welding department is to train weld technicians capable of not only passing companies entry level math test but excelling in their scores. Contextualized learning is effective especially for students who have difficulty with math or English. The biggest change that will affect our academic program over the next four years is the need to train our students to be more than a welder but a weld technician that can think and lead in the industry he/she chooses. We are already looking at the need for more classes to achieve this goal, as well as updating our equipment to reflect this. To achieve this goal, the department emphasizes current technology trends in the weld shop and classroom environment, offering daytime and evening classes. The classroom needs to be a smart room so we can make use of the video material that the Program is acquiring through CTEA Grants and to fully utilize Instructor's power points as a contextualized tool.

Recommendations
Justification for Prioritization
Recommendation #1: splitting 2abc to allow separate advanced lectures sessions to collaborate with the advanced lab.
Program Review Reference
Current Status
Status Report
Impact and Required Resources
No Impacts or Required Resources for this Recommendation
Recommendation #2: Updating Weld 45 curriculum to make sure practices are current.
Program Review Reference
Current Status

Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #3: Increase certificates to reflect time spent in advance classes. Establish short-term certificate programs.	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #4: Offer short term welding classes and courses that promote networking with other departments on campus	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #5: The weld program will be adding a blue print reading class to it's curriculum.	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #6: Hire another full-time instructor approximately \$80,000.	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	

Recommendation #7: introduce nondestructive testing class	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #8: work with the architecture and construction technology classes to strengthen students learning experience in the Structural Fabrication class	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #9: continue instructor education with the National Science Foundation program, Weld Ed.	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #10: instructor training to update program with Lincoln Electric's weld training offered in Cleveland, OH.	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #11: more community outreach to industry leaders	
Program Review Reference	
Current Status	New
Status Report	

Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #12: Working with the Career Advancement Academy and Women in Technology will forward our program with a diverse attendance in ethnicity, gender and age demographics	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #13: Companies are looking for training facilities due to a skills gap and massive wave of retirements in the Trades.cited by the Television program 60 minutes Skills Gap - Manufacturing strategies Initiative	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Recommendation #14: Have Comptons shop approved for AWS or LA City certification 3G & 4G practical exam	
Program Review Reference	
Current Status	New
Status Report	
Impact and Required Resources	
No Impacts or Required Resources for this Recommendation	
Attached Files	
Course review 6 year cycle	

* Attachments can be obtained from links in CurricUNET.