

1. How strong is the occupational demand for the program? As you analyze demand over the past 5 years and projected demand for next 5 years, address state and local needs for the program.

According to the Federal Bureau of Labor Statistics, the projected percent change in employment for welders, ironworkers, fitters/fabricators from 2014 to 2024 is rated at 9%. Millwrights, a combination of welder and machinist/maintenance technician is projected to grow with employment opportunities during this next decade at a rate of a 16% percent increase. The increased use of machinery in manufacturing will require millwrights to install and disassemble this equipment, as well as perform some repair work on it. The average growth rate for all occupations is 7 percent, our trade is growing at a much faster than the average for all occupations. Employment of pipefitters, and steamfitters is projected to grow 12 percent.

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 most important economy in the world. They are stressing the need for workers capable of leadership skills and possessing qualities that involve critical thinking. 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 needed to fill this supply. There are six bridge projects starting in our surrounding area. The largest is a six year contract in San Pedro that will be actively seeking welders with their D1.5 certifications in semi-automatic wire NR232 and 305.

The increased adoption of sophisticated manufacturing machinery will require more “technicians” and critical thinkers to keep machines in good working order. Employment of machinery maintenance workers is projected to grow 8 percent from 2014 to 2024, about as fast as the average for all occupations. Increased automation, including the use of many computer-controlled machines in factories and manufacturing plants, should raise the demand for machinery maintenance workers to keep industries operating smoothly and supporting growth.

The state has many projects with their metro systems, rebuilding bridges, reconstruction of highways, large contracts for sports arenas and building construction that will require highly skilled welders. California specific demand is as follows:

Occupation	2015 Jobs	2020 Jobs	Change	% Change
Boilermakers (47-2011)	817	936	119	15%
Plumbers, Pipefitters, and Steamfitters (47-2152)	38,177	43,198	5,021	13%
Sheet Metal Workers (47-2211)	14,439	15,860	1,421	10%
Structural Iron and Steel Workers (47-2221)	5,311	5,701	390	7%

2. How does the program address needs that are not met by similar programs in the region?

We are dissecting our educational approach trying to introduce all aspects of our trade, offering students a strong foundation of education, nomenclature, machinery exposure, fit-up, inspection and print reading. El Camino Weld Program is about training the students to be Weld Technicians that can be leaders in the field. They 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. Combination welders are in high demand - a difficult task since each process requires a different style, rhythm and technique. Fabrication, prints reading, lay out and fit-up skills that require a deeper understanding of math which we are contextualizing so students can excel as leaders in our industry. Automation and laser technologies are future processes already starting to dominate in select industries.

Each course in the Weld program will build on the previous course to develop each student into highly valued resources for Weld industry employers. Students advancing through the program will develop an in-depth understanding of the science behind Welding. This understanding will help guide students to problem resolution and enable good decision-making when evaluating problems in the field. Each class on the way to completion will look back at the history behind Welding, evaluating industry trends and future needs. Fabrication is a key component to success in the weld industry. Every class along the way to program completion will seek to have students come up with creative solutions to complex problems.

3. What are the completion, success, and employment rates for the students? Discuss any factors that may impact completion, success, and employment rates. If applicable, what is the program doing to improve these rates?

We have approximately 200 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. Overwhelmingly supported by our Advisory Committee, math and the ability to communicate are extremely important to advance in a career as a Weld Technician. 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.

Our employment rate for students is at 87%. If students would be willing to move out of state it would increase by 11%. Certificates of Achievement and Associates Degrees in Welding have doubled each year for the last five years.

4. If there is a licensure exam for students to work in their field of study, please list the exam and the pass rate. If there are multiple licensure exams in the program, include them all. Discuss any factors that may impact licensure exam pass rates. If applicable, what is the program doing to improve these rates?

We offer the prep course for the written part of the LA City D1.1 structural steel certification exam. At the end of the semester the Department of Building and Safety sends a representative to administer the 3-hour test on campus. We are experiencing a 99% pass each semester that we offer this course which only encourages our students to finish their practical exam either the same semester or the following. The department is working out the logistics to certify our shop as an official test site to administer the practical 3G/4G exam to complete the requirements of the D1.1 certification. The first semi-automatic Weld 20A course is being offered this spring semester, an additional certification that completes the LA City D1.1 license and is needed to become an ironworker. This certification will guarantee job placement with the bridge contracts and metro link.

75% of our advance students have completed the testing for the manual part of this license in 2015/2016.

5. Is the advisory committee satisfied with the level of preparation of program graduates? How has advisory committee input been used in the past two years to ensure employer needs are met by the program? Describe any advisory committee recommendations that the program is either unable to implement or is in the process of implementing.

A review of the program has been presented to the advisory committee. The advisory committee members discussed the changes to the program and the importance of implementing emerging technologies into the program. The advisory board is used to exchange and gather information, many of the questions posed result in 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.

The advisory committee agreed on the importance of flux core certification, fabrication, laser and automation systems into the program; however, the consensus was to maintain building the foundation on the fundamentals of process and print reading is crucial in the welding trade.

The committee agreed that students need to develop basic skills to use common hand tools and semi-automatic equipment used in the industry. The committee agreed that many of those completing Weld programs do not have the basic hand tools skills necessary to work effectively in the industry. The Weld department is currently working with the HVACR department on a course in basic had tools in response to committee input. Members agreed to support this direction through classroom participation.

California Education Code 78016 requires that the review process for CTE programs includes the review and comments of a program's advisory committee. Provide the following information:

a. Advisory committee membership list and credentials

b. Meeting minutes or other documentation to demonstrate that the CTE program review process has met the above Education Code requirement

Welding Advisory Committee

MINUTES - 2016

1. Program updates
 - a. New courses pending:
 1. Welding 20A – Flux Core and Gas Metal Arc Welding
 2. Split Welding 1 into Welding 1A and 1B; Welding for Manufacturing
 3. Split Welding 45 into Welding 45A and 45B
 4. Tools for Fabrication
 5. Fabrication Equipment Troubleshooting and Maintenance
 - b. New courses approved
 1. Welding 29 - Print Reading
2. Automation program
 - a. Manufacturing/Fabrication
3. Need for New equipment
 - a. Cold saw
 - b. Increase in weld booth – noted that the FCAW should be split from SMAW to accommodate growth in industry and need of trained welders
4. Stackable Certificates of Accomplishment and Certificates of Achievement
 - a. Gas Tungsten Arc Welding
 - b. Structural Fabrication
 - c. Industrial Arc Welding
 - d. Maintenance Technology
5. Alignment with industry needs
 - a. FCAW program
 - b. multi-process manufacturing weld course
 - c. fabrication and automation courses
6. Program direction and updates

During the advisory committee meeting the team reviewed Industry trends and shortage of skilled welders. It was noted that two adult training facilities that were previously closed by LAUSD have been reopened to accommodate the massive need for trained welders. All committee members emphasized the importance of the LA City D1.1 Structural Steel certification. Due to the reopening of LAUSD adult schools they also noted that the FCAW machines should be given separate space from SMAW to accommodate the growth in student body and support structural industry needs for trained welders.

Among the skills that the committee thought were important for the students were print reading and soft skills including communication, integrity, ability to work with others and timeliness. The committee also generally agreed on the importance of academic skills including math, writing, critical thinking and the ability to read technical manuals. For lead welders and foreman, motivated students with interpersonal skills would be singled out amongst the talented.

In general the committee agreed that for growth in many companies, students should have documentation to validate their skill levels including the associate's degree, bachelor's degree, industry certifications and credentials. The committee was very enthusiastic about the opportunity for multi-process courses, robotics and FCAW courses. They were amazed that ECC hadn't offered a dedicated print reading course as part of the curriculum and could not emphasize enough about its importance. Fabrication skills are paramount in many small companies or leadership positions.

The advisory committee was informed that the Weld program was introducing three new courses, Weld 20A, Weld 1A & Weld 1B. The committee agreed wholeheartedly on the importance of graduating students to understand the fundamentals of math and multiple processes.

The advisory committee was very enthusiastic about the El Camino Weld program offering a flux cored program that represents a majority of structural steel opportunities. They were also impressed that we are looking to support manufacturing by splitting the Weld 1 into a beginning and advance multi-process course.

In summary the committee believed the El Camino Weld program was on the right path and provided students with the general skills necessary to be successful at an entry-level position within the weld industry. It was unanimously agreed that educating our students in soft skills benefits in employment. The committee was advised that the ECC Weld program will continue to strive to produce the kind of Weld Technicians that the industry so desperately needs. The El Camino Weld program is evolving into a premier program specifically designed to meet the long-term Aerospace and structural steel industry needs. It was also expressed ECC needs to have state of the art equipment for our students to train on. The committee believed that the certificate was needed to quantify student skills and agreed with the idea of stackable certificates.

There was unanimous agreement that there are tremendous growth opportunities within the next 2 to 5 years for manufacturing, aerospace and structural steel. Overall the committee was very impressed with the progress El Camino Weld program has made over the last few years and is excited about participating in the program growth.

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