Eastern Wyoming College

Instructional Program Review
2013 - 2014

Program: Welding & Machine Tooling

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EASTERN WYOMING COLLEGE
Instructional Program Review

Program Name: Welding and Joining Technology & Machine Tool Technology

Part I: Statistical Data from the past three years:

	2010-2011	2011-2012	2012-2013	5-Year Average
Annualized FTE Enrollment	95.9	106.1	120.7	95.3
Annualized FTE Faculty	8	10.4	9.9	8
# Students	134	147	153	124
# Graduated	36	52	66	46

FTE = Full-time equivalent Notes:

Modes of Delivery:

[ ] online [ ] compressed video [X] face-to-face

Advisory Committee Members and Title or Role: Lynn Bedient, EWC; Michael Helzer, Wyoming Machinery; Stan Nicolls, EWC; Russell Rux, Campbell County High School; Mark Herrman, Peabody Energy; Ted Schaaf, Matheson TriGas; Tim Anderson, EWC; Leland Vetter, EWC; Rollie Young, SourceGas; Joel Alworth, Converse County High School; & Gunther Koob, Scottsbluff Industries.

Community Partners or Internships: Numerous local and regional industries that employ welders.

Revisions in Curriculum Since Last Review: In 2011 WELD 2645, a course in GTAW pipe welding, was added to the curriculum; in 2013 we added a semiautomatic pipe welding course, WELD 2990, a topics course. Additionally, one-credit hour courses for workforce training and for training on the virtual welder were added.

Part II Narrative Analysis

Description of Community Need:

Welders and machinists are still in high demand in Wyoming and the surrounding area. Our students are highly recruited and find good jobs. At the annual job fair, it is not unusual to have up to 20 companies interested in our graduates.

Description of State and National Trends (if applicable)

United States	Employment		Percent Change	Job Openings
	2012	2022		
Welding, Soldering, & Brazing Workers	357,400	378,000	6%	108,500
Machinists	397,000	432,000	9%	125,900
Wyoming	**Employment**		**Percent Change**	**Job Openings**
	2006	2016		
Welding, Soldering, & Brazing Workers	1360	1979	46%	100
Machinists	452	706	56%	36

Other information or comments that would assist the Curriculum and Learning Council: Note: the data for the State Employment Trends and the National Employment Trends are not directly comparable. The projection period for state data is from 2006-2016, while the projection for national data is from 2012-2022. Job Opening refers to the average annual Job openings due to growth and net replacement.

State and National Wages (from 2008 through 2018): Welding, Soldering, & Brazing Workers

Location	Pay Period	Year or Period				
		10%	25%	Median	75%	90%
United States	Hourly	$ 12.01	$ 14.51	$ 17.66	$ 21.94	$ 27.46
	Yearly	$ 24,990	$ 30,180	$ 36,720	$ 45,640	$ 57,120
Wyoming	Hourly	$ 14.77	$ 18.04	$ 22.18	$ 28.61	$ 35.23
	Yearly	$ 30,720	$ 37,530	$ 46,120	$ 59,510	$ 73,280

State and National Wages (from 2008 through 2018): Machinists

Location	Pay Period	Year or Period				
		10%	25%	Median	75%	90%
United States	Hourly	$ 11.68	$ 14.94	$ 19.03	$ 23.69	$ 28.88
	Yearly	$ 24,280	$ 31,080	$ 39,570	$ 49,270	$ 60,070
Wyoming	Hourly	$ 13.59	$ 17.13	$ 20.92	$ 24.99	$ 29.77
	Yearly	$ 28,270	$ 35,630	$ 43,510	$ 51,990	$ 61,920

Other information or comments that would assist the Commission: Information on this chart was from Wyoming Employment Projections http://doe.state.wy.us/lmi/proj2005/long_occ2014.htm. Wage data are collected by each state through the Occupational Employment Statistics (OES) survey, conducted by the Bureau of Labor Statistics (BLS) at the U.S. Department of Labor. National wage estimates are developed by BLS. State and national occupation infomation is classified using the Standard Occupation Classification (SOC) system.

Activities in Support of Student Recruitment and Retention:

Welding Tutors are available in the Learning Skills Lab for students needing additional assistance. Faculty members are available during office hours and other times to help individual students.

Assessment of Student Learning:

Students continue to do well on their practical, hands-on welding certifications. Only a few students in this three-year period did not pass their plate and pipe test certifications. However, the written tests have been a challenge for students. The average for certificate students over this period was 79.8%; the average for the AAS degree on the written tests was 68%. More emphasis on general education courses has been emphasized, and it was felt that students need a comprehensive review of welding technology before taking their written exams. The use of the tutors in welding will help support the material covered in the written exams. Plans were made to add a virtual welding machine to the program for students who think they might be interested in welding and for students in welding that may want further assistance in improving their welding skills.

Strengths of the Program and Faculty:

Students continue to do well in job applications, getting jobs, and reportedly once they have been hired. In formal competitions, EWC students continue to dominate in welding, both at the state and the national levels. Faculty continue to attend and successfully complete outstanding training and certification schools in welding and machine tooling around the country. The program has built a strong reputation both regionally and nationally. The current faculty work well together as a team and substantially complement each other in and out of the classroom. Faculty members are well qualified with appropriate degrees, certifications, and industry experience.

Part III Recommendations

Faculty Recommendations:

*Maintain our premier welding and machine educational center for the state of Wyoming by completing a new technology center.

*To be the place that industry looks for the finest trained and highest skilled workers.

*To maintain the knowledge and skill of instructors by on-going self-improvement activities.

*To be able to display coursework on a big screen in the lab from any office computer.

*Add staff to expand course offerings and accommodate the increase in student numbers.

*Capping enrollment in lab courses to ensure quality instruction for all students.

Advisory Committee Recommendations:

Do not lose sight of what has brought the program to its current level:

1. Maintenance welding

2. Structural welding

3. Pipe welding

In response to industry requirements, move to more:

1. Automation
   *Robotics
   *Computer Aided Cutting (CAC)
   *3-D Drafting
   *Computer Numerical Controlled (CNC) lathes & mills

2. Technology
    *Projection systems in labs
    *Welding simulation

Division Chair Recommendations:

The program will enter a new era because of the retirement of Leland Vetter and the construction of a new facility. Leland has built a solid team that will be capable of continuing a strong program. The momentum of the program will continue temporarily, but Leland's replacement and the current instructors will need to find their way of recruiting for and management of the program. I think it will be important to continue the consistency in the philosophy being taught in the program, but I think there should be room for possible changes, such as introducing more technology, that will keep the program current and relevant to today's workplace.

The current faculty work extremely well together and their skills are different enough that they complement each other in the program. I believe we have hired a good instructor to come in, and he will bring another skill set to the mix. I think their weekly meetings should continue and I think I should be a part of them, at least in the beginning. In the past Leland has basically administered the program and now they will have to take over and share these responsibilities, which I think they are capable of doing. It will, however, be an adjustment for them. I believe we need to explore the possibilities of developing a good pool of adjunct instructors available to use as the program expands. Because of Leland's contacts and many years of networking, there has not really been much of a recruiting effort in recent years. We cannot rely on this in the future and current instructors will need to establish a recruitment plan in order to continue the growth we have seen in the program.

I think it is paramount that we continue the industry/company contacts that have been established and work on expanding them. The Welding Trailer should be used strategically to provide the training that is needed. I would like to see the expansion of community programs in the welding area because I think they would be very popular and would solidify community support for the new CTEC. Instructors will need to continue working on AWS certifications and keeping up with the latest changes in the field.

Vice President's Recommendations:

The Welding and Joining Technology program is one of EWC's shining stars. The growth of the program sometimes surprises us and has been enhanced in the last three years with the addition of the Department Of Correction sites located in Torrington, Newcastle, and Lusk. The Plate Welding Certificate program is offered at these locations and numerous students have completed and graduated with this valued workforce credential. The DOC instructors have equally fine credentials and do an outstanding job with their students. Additionally, the welding courses are more frequently being offered as concurrent enrollment courses with our service area high schools. The Welding Advisory Council has been instrumental in guiding curriculum changes as needed and supporting the direction of the master plan with the proposed Career and Technical Education Center. While I agree with the recommendations made by the faculty, advisory committee members, and division chair; my summary recommendations are below:

1. Form a new team and support each other by communicating thoroughly and helping each other out as necessary. Leland Vetter has contributed much to this program and his legacy will go on; however, it is important for the faculty members to use their voices and develop strong directions for the program.
2. Hold weekly faculty and division chair meetings for the next year. This will help get all the things discussed and developed as necessary.
3. Distribute some of the duties that Leland carried out among the full-time faculty members. These include workforce training, coordinating the mobile lab, ensuring the ongoing AWS testing and center accreditation activities, ordering the supplies and materials, arranging for maintenance requests, and helping with the coordination of the laboratories and classrooms.
4. Continue participating in yearly articulation meetings. The statewide group had not met for almost 20 years, and we held the articulation meeting in Torrington this spring to bring all of the welding and joining community college faculty members together to discuss programs, concerns, and curriculum directions. The next meeting has been planned for October in Casper. Our faculty members need to attend these meetings and take a leadership role as appropriate since we have the best welding program in the state!
5. Explore new curriculum directions while still valuing the strong fundamental programs that we currently have. In support of the advisory council recommendations, we need to look at technology and innovation including robotics, computer aided cutting, and emerging technologies. We may want to explore additional CAD classes or developing a certificate program in that area.
6. Recruit and support additional adjunct instructors to help us expand into some of these other areas.
7. Participate in meetings with concurrent enrollment instructors and provide support to them as appropriate so that our concurrent courses are providing the same quality instruction as what we have on campus.
8. Help with the design of the new CTEC and participate in planning meetings, community meetings, and supporting the bond election campaign.