

Lassen Community College
Welding Advisory Committee Meeting
December 19, 2018
Minutes

Present:

Dr. Trevor Albertson, LCC Dean of Instructional Services
Bill Gaines, Transfer Flow, Inc.
Richard Hammes, Frank M. Booth, Inc.
Kim Keith, Alliance for Workforce Development
Kory Konkol, LCC Welding Faculty
Eli Lattin, LCC Adjunct Welding Instructor
Fran Oberg, LCC Academic Services

I. Call to order:

Members were given a tour of the Welding shop prior to the meeting. The meeting was called to order by Kory Konkol at 12:15pm

- A. Introductions:** Members introduced themselves and gave a brief description of the companies they represent.
- B. Functions of an advisory committee:** District policy and procedure for career technical advisory committees were reviewed. There were no questions.
- C. Summary of AP 4102 and the Lassen College Welding Program:** District policy and procedure specific to the Welding department advisory committee were reviewed. There were no questions.

II. State of the Welding Program

A. Enrollments: There are currently 60 students in the Welding program and more from the Gunsmithing program taking TIG welding. Classes are structured so that students learning different processes are in shop at the same time. New students can start the program every semester. We'd like to re-structure classes and will go in depth later in the meeting.

B. Curriculum:

- Current class offerings and degrees/certificates: The 30 series are beginning classes, 40 series are advanced classes, 20 series are pipe welding classes. We would like to delete WT-36 and incorporate that content into other classes. WT-37 would be restructured.
- AWS-qualification tests are offered in each class. Qualification tests are done here.
- We have an articulation agreement with the high school for 2+2/Dual Enrollment. The classes are free to high school students. We don't know why more high school students are not taking advantage of it. Possibly transportation? See if the bus can run later? Dr. Albertson is on the Lassen Rural Bus board now and will ask about a change to bus schedules.
- We have a Welding for Artists course that is offered in conjunction with the Art Department. Bill Gaines shared pictures of welding art that 4th graders in Durham completed. He suggested incorporating SolidWorks DXF files.
- Bill stated that Transfer Flow has a difficult time finding people to run their equipment. If you can master SolidWorks, you can master plasma, laser & other

machines that are important in manufacturing. Need to start young, in grade school, teaching SolidWorks, CNC plasma & Solid Works, drafting is behind the times. What do we need to do to make it happen? Kory and Dr. Albertson will work on reaching out to the high schools and grade schools. Bill offered to be a guest speaker.

C. Scheduling:

- Currently we offer “stacked” classes; students in different classes, working on different projects during the same time frame. This was a necessity when we only had one welding instructor. The benefit for students is that we offer every class every semester, so students don’t have to wait for classes to be offered. The struggle for instruction is that all materials have to be ready all the time and instructors are doing one-on-one tutoring in lieu of a formal lecture period.
- Now that we have a second welding instructor, we want to restructure how we do things. Offer classes on a rotating schedule with only one course being offered in a specific time frame. More structure would benefit students. Have formal lecture and testing would help students retain information better. With everyone in the shop working on the same project, it would create a sense of comradery/competition among students. That could translate into better retention.
- Currently use 1-unit classes for testing for students that are already employed. We’re trying to get at FANUC certification program up and running. The hold-up is we need to put together a video. We’re working on it. A suggestion from a member – would it be possible to farm the video project off to the FBLA at the high school?

D. Improvements – Completed: An overview of completed projects was presented. The spring class will complete the steel rack. Real life projects make students more relevant. A suggestion was made to partner with businesses. Businesses could buy materials & students would complete projects. It works well at Chico high school.

E. Advertising: We currently run regular newspaper ads. We do run a movie theater ad. Most kids don’t look at the paper so we’re also pursuing running ads with Pandora or Spotify in our local market.

F. Recruiting/Outreach:

- Kory has done outreach visits to Modoc, Lassen, and Herlong high schools. Westwood is rebuilding their welding anymore, so Kory has not done outreach there. Kory has used his welding box to give live demos at Discover Lassen and for Diamond View 7th graders. Native American kids had tours this summer.
- Suggestion from a member: If students could see a direct path to employment, it could have a positive impact on recruitment. With all the manufacturing happening in Reno, could we partner with some businesses? Kory has reached out to Cashman but hasn’t heard back yet. May need to set up a face-to-face meeting. McBride is one of Kory’s contacts—it’s where the jobs are. Check into metal suppliers like Gerlinger Steel as another possible resource for leads. We would like to see more of these people on our Advisory Committee so they have a say in our curriculum.
- Local job opportunities are limited, with the prisons and Herlong Army Depot being the biggest employers. Most students will need to go out of the Susanville area for jobs.

- Bill Gaines' company, Transfer Flow, has a formal job shadowing program. Students complete a pre-tour one page paper researching the company, the 40 careers they offer, and what the student expects to gain from the tour. Students submit a post-tour one page paper picking the job they are most interested in. Job shadowing candidates are chosen from those papers. There is a post-job-shadowing paper. Students re-evaluate their Ed Plans so they can be ready to work. They have offered this program to middle schools and high schools and would be willing to work with the college.
- Kim Keith brought occupational growth opportunities/labor market information. Alliance for Workforce Development offers on the job training in all counties they serve.
- Richard Hammes stated that certified welders are in demand in the Bay Area and Sacramento. They need the ability and must want to work. He has connections on how to succeed after completing LCC.
- There was a discussion on qualifications vs. certification, certified testing facilities, certified welding instructors, and testing procedures.

III. Discussion Items

A. Curriculum – Updating/removing/replacing current course offerings: Courses were reviewed, with comments made on the following courses:

- WT-38: This is used a lot in the field for non-structural applications like HVAC. Used in manufacturing frames, chassis. Supplemental steel in the field T-11. Adding open root is good. Much faster & used by home welders
- WT-39: Keep content the same but add a lecture component. Nothing bigger than 16 gauge.
- WT-40: No need for this class anymore. No jobs.
- WT-42: Back gouging/back weld has been added. We do up only. Down is also used in industry.
- WT-43: We do flat, horizontal, vertical & overhead.
- WT-44: Aluminum pulse is more desirable in manufacturing. FCAW T1 & T8 used in structural/bridge/seismically rated applications.
- WT-45: Was done off-hand. No need for this.
- WT-20: Hand beveling good thing to learn in the field before playing with beveling aids in the shop.
- IT-22: OSHA 10 is good for students. OSHA 30 is not needed until foreman level & lead people.
- IT-72: Not just welding, but jack of all trades type jobs like Sierra Pacific millwright. Need critical thinking skills.

B. New courses:

- WT-52: Does the course outline of record meet industry need?
- SolidWorks: The license is already purchased. Need to build curriculum. Won't activate license until needed.
- G-Code/3D Printing: Should these be stand alone, possibly 3-day classes, or incorporated into Plasma classes?
- CNC press brake: If we get it, we could do lots for the college.

- 0.5-1 unit layout & pattern making for pipe welding: Laboratory work done in the field. Most other done in factory or shop. Possibly incorporate into existing pipe class. More feedback needed.
 - AWS code class: Helps students understand why we're so picky.
 - Does industry need any new classes for sheet metal, pipefitting, plumbing, etc? We have everything Richard needs already.
 - How to read Blueprints: The need is huge in industry. Possibly offer advanced blueprint class with real life scenarios. Richard will send some samples Eli can use in class. Engineer single line not really needed. Double line drawings that tradesmen use to detail specs & building materials is useful. The need is different in Bill's industry. He needs people that can visualize 3D. About 1 in 6 people can do it. This different emphasis might appeal to different students.
- C. Scheduling:** The proposal is to stop stacking classes when scheduling. It will be implemented gradually so existing students can still complete their degree on time.
- D. Offering a new advanced manufacturing certificate:** The new certificate proposal in Advanced Manufacturing was presented. Do we split it up into smaller certificates? The consensus was no. This would open a lot of opportunities at many companies. People with multiple skill sets are more valuable to cover for illness or during shutdowns/layoffs.
- E. Equipment/Facility needs:**
- Improve ventilation in shop: Richard has connections if we need help with vendors to deal with it.
 - Improve lighting in shop: Would PG&E or LMUD have programs to change to LEDs?
 - There is a lot of money available for CTE programs, but we need to be able to utilize it. Installation and other costs need to be added to the cost of acquiring machinery.
- F. Other advisory committee recommendations:** Nothing in addition to discussions above.

IV. Recommendations – Topics for Your Consideration, Discussion and Vote: Kory asked all members, those who were present and those who were not able to attend, to complete and submit a questionnaire. A summary of the results is below:

The following results are from our December 19th 2018 advisory board meeting:

All eight voting members agreed to the following for WT-36

WT-36 - Proposal, inactivate our beginning oxy-acetylene welding (OAW) course. A new welding course will be created that will encompass OAW as well as shielded metal arc welding (SMAW). This new course will be structured to articulate with area high schools.

All eight voting members agreed to the following for WT-37

WT-37 – This is our beginning three-unit SMAW lab only course. Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). Objectives – Using SMAW 6010 and 7018 welding electrodes to weld lap, corner, T-joints and groove welds in the vertical and overhead positions.

All eight voting members agreed to the following for WT-38

WT-38 – This is our beginning three-unit Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW) lab only course. Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). Objectives would remain the same, with the exception of adding open root GMAW to plate.

All eight voting members agreed to the following for WT-39

WT-39 - This is our beginning three-unit Gas Tungsten Arc Welding (GTAW) lab only course. Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). No other changes.

All eight voting members agreed to the following for WT-40

WT-40 – Advanced oxy-acetylene welding. Proposal is to inactivate the class.

All eight voting members agreed to the following for WT-42, with one recommendation to consider including Surface Tension Transfer (STT).

WT-42 – This class practices SMAW open root groove welds using 6010 and 7018 electrodes. Only one proposed change is to add the following objective - back gouging to the root pass followed with a back weld.

All eight voting members agreed to the following for WT-43

WT-43 – This class practices GTAW open root groove welds. No change.

Seven voting members agreed and one abstained, because they didn't use the welding process in WT-44.

WT-44 – This is our advanced GMAW and FCAW (running dual shield T-1 wire) three-unit lab only class. Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). Objectives – continue with GMAW spray and pulse on steel, but add aluminum pulse welding and GMAW welding of pipe. FCAW dual shield would be removed from objectives and added to a new course.

All eight voting members agreed to the following change for WT-45

WT-45 – This is our advanced GTAW class. Proposal is to inactivate the course.

All eight voting members agreed to the following for WT-20

WT-20 – This is our beginning pipe welding class, where 1G open-root pipe and plate work in all positions is performed using SMAW 6010/7018 electrodes. Proposal is to remove the plate-welding component and add 2G pipe. Hand beveling of the pipe will also be a component before students are allowed to use more automated methods.

All eight voting members agreed to the following for WT-21

WT-21 – This is our second pipe welding class in a series of four. Proposal is to change the objectives, where pipe welding in the 5G and 6G welding positions are covered using SMAW 6010/7018 electrodes.

All eight voting members agreed to the following for WT-22, with one recommendation to consider including Surface Tension Transfer (STT).

WT-22 – This is our third pipe welding class in a series of four. Proposal is to replace the current objectives with pipe welding in all positions (1G, 2G, 5G, 6G) using GTAW for the root pass followed by SMAW 7018.

All eight voting members agreed to the following for WT-23

WT-23 – This is our last pipe welding class in a series of four. The current objectives are what are being proposed for WT-22. Proposal is to create a specialty pipe welding class that covers pipe in the 4” and smaller diameters. The GTAW and GMAW processes will be used to complete the pipe from the root out to the cover pass.

All eight voting members agreed to the following for IT-22

IT-22 – This is our safety class. Proposal is to upgrade this class to an Occupational Safety and Health Administration (OSHA) 10 standard. OSHA 10 cards to be given at completion (passing).

All eight voting members agreed to the following for IT-72. One member recommended a concentrated effort towards maintenance in the manufacturing sector. A focused effort would be placed on critical thinking, electrical, hydraulics, pneumatics, machining, computer skills, reading schematics and electronics.

IT-72 – This is our facilities maintenance class. No change.

The following are potential new course offerings:

All eight voting members agreed that the following class be created.

Beginning and advanced classes in robotic welding

All eight voting members agreed that the following class be created. One member recommended using the sheet metal module to design a product and then create a DXF file to cut the parts on our CNC plasma cutter. Then optimize the patterns to save material.

Beginning and advanced classes in CNC plasma cutting

All eight voting members agreed that the following class be created. One member recommended using the sheet metal module to design a product and then create a DXF file to cut the parts on our CNC plasma cutter. Then optimize the patterns to save material.

CAD, beginning and advanced using SolidWorks

All eight voting members agreed that the following class be created. One recommended we integrate G-Code into the 3D printing class instead of offering G-Code on it’s own. Another member recommended we have students write code to cut part on CNC plasma or create part on 3D printer.

G-Code

All eight voting members agreed that the following class be created. One member recommended jigs be made for QC or holding components to be welded with our robot.

3D Printing

All eight voting members agreed that the following class be created. One member recommended students learn to calculate gain lengths and optimize a program to reduce process time.

CNC Press Brake

The following are new welding courses to replace the proposed inactivated ones:

All eight voting members agreed that the following class be created. One member noted that they didn't see a need for OAW

A new entry-level welding course that will articulate with area high schools. SMAW and OAW processes would be used, thus replacing WT-36

Seven voting members agreed and one abstained, because they didn't use the welding process in the proposed class.

A new welding course that will focus on using T-1 and T-8 wires for welding T-joints and groove welds in all positions. These wires are used in heavy equipment manufacturing and repair as well as bridge/building construction. T-8 is seismic rated.

All eight voting members agreed that the following class be created.

A 0.5 – 1 unit layout and pattern making class for pipe welding

All eight voting members agreed that the following class be created.

A 1 unit AWS D1.1 code class

Scheduling

Seven voting members agreed and one disagreed with concerns that a stand-alone class may not fill. Another member recommended transitioning into the new schedule slowly to help current students get on track.

Proposal is to stop stacking the welding classes when scheduling.

Offering a new Advanced Manufacturing certificate

All eight voting members agreed to the following proposal. One recommendation was to encourage students to bring this certificate when applying for a job.

Proposal is to offer a Certificate in Advanced Manufacturing

Equipment/Facility Needs

All eight voting members agreed to the following equipment and facility needs.

- *Improve ventilation in the shop*
- *Improve lighting in the shop*
- *Run wiring and add electrical drops to new welding booths in construction trades*
- *Install ground rod for our CNC plasma cutting table*
- *Continue the purchase of multi-process welding machines, to replace 20 plus year old single welding process units.*
- *Purchase 3D Printer – if needed for the certificate in advanced manufacturing*
- *Purchase CNC press brake - if needed for the certificate in advanced manufacturing*

Other Recommendations from Members

- *I believe the vocational courses and curriculum at the high school and community college needs to be upgraded so they are relevant to industry standards. These new options will need to be advertised outside our community as well in order to pull in possible students. Contact power plants, Sierra Pacific Lumber, Collins, etc. to see if you can partner with them on training future employees.*
- *Recommend an activity to consider copper refrigeration pipe brazing with prequalified procedure.*
- *The ground rod should be done now!*
- *In regards to advertising, use “career” instead of “job in your flyer.*
- *In regards to outreach, Quincy/Greenville area would be a good place to recruit new students. Feather River College doesn’t offer a similar program and the population is under-served.*

V. Adjournment: 3:25 p.m.

To: Lassen Community College
Welding Advisory Board

From: Kory Konkol

Date: December 6, 2018

Subject: Agenda – Review

Ladies and Gentlemen:

Below is the agenda for the LCC Welding Advisory Board Meeting to be conducted on 12/19/2018.

Agenda:

- I. **Call to order**
 - A. Introductions - Voting and Non Voting Members (Page 2)
 - B. Functions of an advisory committee –District procedure AP 4102 (Page 3)
 - C. Summary of AP 4102 and the Lassen College Welding Program. (Page 4)

- II. **State of the Welding Program**
 - A. Enrollments (Page 5)
 - B. Curriculum – Current class offerings and degrees/certificates (Page 6)
 - C. Scheduling (Page 7,8)
 - D. Improvements – Completed (Page 9)
 - E. Advertising (Page 10)
 - F. Recruiting/Outreach (Page 11)

- III. **Discussion Items**
 - A. Curriculum – Updating/removing/replacing current course offerings (Page 12,13)
 - B. New courses (Page 14)
 - C. Scheduling (Page 14)
 - D. Offering a new advanced manufacturing certificate (Page 15)
 - E. Equipment/Facility needs (Page 15)
 - F. Other advisory committee recommendations (Page 16)

- IV. **Recommendations – Topics for Your Consideration, Discussion and Vote.**

- V. **Adjournment**

**Welding Technology Program Advisory Committee
2018 Academic Year and Attendees**

(Current Members)

Individual	Company or Agency	Membership Qualification
Kim Keith kkeith@ncen.org	Youth Program Supervisor Alliance for Workforce Development Inc. Susanville, CA	Voting
Dallas Langley maintenance@hlpower.com	Maintenance Supervisor HL Power Company – Wendel, CA	Voting
Paul Niemer PNiemer@spi-ind.com	Safety/Personnel Development Director Sierra Pacific Industries – Redding, CA	Voting
Jeffery Morrish nst@frontiernet.net	Professional Engineer NST Engineering – Susanville, CA	Voting
Dr. Trevor Albertson talbertson@lassencollege.edu	Dean of Instructional Services (CTE) Lassen Community College	Non-Voting
Dr. Gregory South gsouth@lassencollege.edu	Vice President Academic Services Lassen Community College	Non-Voting
Dr. Marlon R. Hall mhall@lassencollege.edu	Superintendent/President Lassen Community College	Non-Voting

(New Members)

Bill Gaines bgaines@transferflow.com	Senior Engineer, Chairman Transfer Flow Inc., Chico, CA	Voting
Bill McBride BMcbride@mathesongas.com	Site Manager Matheson Tri-Gas Inc. – Sparks, NV	Voting
Richard Hammes RichardH@Frankbooth.com	Project Manager Frank M. Booth Inc. – Marysville, CA	Voting
Eli Lattin Voting elattin@lassencollege.edu	Adjunct Welding Instructor Lassen Community College	

Functions of an Advisory Committee

Item: I. B

The following is from Lassen Community College's District procedure AP 4102 regarding career and technical programs.

Functions

An advisory committee shall serve as an informational body for the program faculty, the Curriculum/Academic Standards Committee, the Instructional Office, the Superintendent/President and the Board of Trustees as might be required or requested. Committee members are expected to provide professional expertise and to offer recommendations for creating an environment of continuous quality improvement in program curricula and student success. Specific functions may include, but are not limited to, the following:

1. Explain industry or professional functions and requirements.
2. Provide industry trends and projections for employment opportunities and wage structures.
3. Review existing or proposed curricula and offer recommendations with respect to current or projected technology and competency requirements.
4. Recommend faculty and staff development opportunities.
5. Participate in the development of student scholarships, job shadowing, cooperative work experience and internship opportunities, and other approaches to student success.
6. Participate in the development of additional funding opportunities for new equipment and equipment replacement for the program.
7. Assist program faculty with feasibility studies and need assessments as requested.

Summary of AP 4102 and the Lassen College Welding Program

Item: I. C

From the above specific functions I would like to elaborate more specifically regarding key areas that pertain to the welding program.

Key numbers from above:

- 2/7. Provide recommendations based on your industry need and trends.
3. Review the current welding course offerings and provide recommendations (add/remove) coursework where applicable.
5. Recommend job shadowing or internships where applicable within your industry.
6. Recommend any specialized equipment, tooling or software that would better prepare our students to obtain employment within your industry or abroad.

State of the Welding Program

Item: II. A – Enrollments

Our Students

Current enrollment as of 10/7/18 for fall classes is: 60

The background and needs of our student population varies greatly. Our students consist of those that are still in high school to those who are retired. The following is a list (in no particular order) of reasons why students enroll in the welding program: Degree/Certificate, personal interest, completion of welding qualification tests for a current or future employer need, and high school credit. To meet those needs, the welding shop is open four days a week and is staffed by one full-time, and two part-time adjunct instructors as well as an instructional support specialist. (See pages 8 for hours of operation)

State of the Welding Program

Item: II. B – Curriculum

Current Class Offerings

Currently, the welding program offers the following classes:

- Four pipe-welding classes, WT-20 through WT-23
- Four beginning welding classes, WT-36 through WT-39 (Separated by type of welding process)
- Five advanced welding classes, WT-40 and WT-42 through WT-45 (Separated by type of welding process)
- Two gunsmith welding classes, WT-31 and WT-32
- Welding for artists, WT-50 and ART-50
- Blueprint and Symbol Reading, WT-51
- Two industrial technology offerings, IT-22, Operations Maintenance Safety and IT-72, Facilities Maintenance

For a more detailed description of the above classes, see pages 26-28 taken from our 2018-2019 course catalog.

Degrees and Certificates

Currently, the welding program offers the following degrees and certificates:

- Associate in Science Degree Welding Technology
- Certificate of Achievement: Welding Technology - Two Year
- Certificate of Achievement: Welding Technology – One Year
- Certificate of Accomplishment: Welding Technology

For a more detailed description of our degrees and certificates, see pages 24,25 taken from our 2018-2019 course catalog.

State of the Welding Program

Item: II. C – Scheduling

The Welding Technology Program schedules classes to provide students the opportunity to develop welding skills for a vocational career. The program also assists those already employed to improve their skills or to train for advancements, transfer or other careers.

Currently, the Welding Technology Program offers classes four days a week with both morning and evening classes. All of the Welding Technology classes are offered every semester with the exception of - IT-22, IT-72, and WT-32, which are offered in the spring and WT-51 and WT-31, which are offered in the fall.

In order to offer most all of our welding classes every semester we stack the classes. For example, when the 30 and 40 series classes are scheduled, they are all scheduled for the same days and times. The stacked classes allow us to combine enrollment numbers, where a stand-alone class might not fill and get cancelled.

Schedules showing the days and times that the Welding Technology Program operates can be found below (Page 8)

Instructor Name: Kory Konkol -WELDING Semester: Fall 2018
OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am - 9 am	WT-51 8:00-8:50 Lattin		WT-51 8:00-8:50 Lattin			
9 am - 10 am	WT 36-39 WT 40-45 Lab 9:00-1:15 Konkol		WT 36-39 WT 40-45 Lab 9:00-1:15 Konkol			
10 am - 11 am	WT 36-39 WT 40-45 Lab		WT 36-39 WT 40-45 Lab			
11 am - 12 pm	WT 36-39 WT 40-45 Lab		WT 36-39 WT 40-45 Lab			
12 pm - 1 pm	WT 36-39 WT 40-45 Lab 1:15		WT 36-39 WT 40-45 Lab 1:15			
1 pm - 2 pm	Office 1:15-2:15 Konkol					
2 pm - 3 pm	WT 36-39 WT 40-45 Lab 1:45-6:00 Lattin		WT 36-39 WT 40-45 Lab 1:45-6:00 Lattin			
3 pm - 4 pm	WT 36-39 WT 40-45 Lab	Office 3:00-4:00 Konkol	WT 36-39 WT 40-45 Lab	Office 3:00-4:00 Konkol		
4 pm - 5 pm	WT 36-39 WT 40-45 Lab	WT 22 Lec 4:00-4:50 Konkol	WT 36-39 WT 40-45 Lab	WT 23 Lec 4:00-4:50 Konkol		
5 pm - 6 pm		WT 20 Lec 5:00-5:50 Konkol		WT 21 Lec 5:00-5:50 Konkol		
6 pm - 7 pm	WT 32 6:00-7:00 Lecture Schmidt	WT 20-23 Lab 6:00-8:50	WT 32 6:00-9:20 Lab Schmidt	WT 20-23 Lab 6:00-8:50		
7 pm - 8 pm	WT 32 Lab 7:00-9:20	WT 20-23 Lab	WT 32 Lab	WT 20-23 Lab		
8 pm - 9 pm	WT 32 Lab	WT 20-23 Lab 8:50	WT 32 Lab	WT 20-23 Lab 8:50		
9 pm - 10 pm	WT 32 Lab 9:20	Office 8:50-9:50 Konkol	WT 32 Lab 9:20	Office 8:50-9:50 Konkol		

State of the Welding Program

Item: II. D – Improvements

Other Projects and Improvements

Below is the most recent list of projects and or improvements that have been completed in the welding program.

- Students in our facilities maintenance class, IT-72, constructed 28 new lockers to store their gear in.
- Continued outside cleanup at the rear of shop.
- Students in our spring 2018 IT-72 class started the construction of a new steel rack that will be located outside. Completion of the rack will be in the spring of 2019 by IT-72 students.

State of the Welding Program

Item: II. E – Advertising

At present a print ad is run in our local paper, The Lassen Times, as well as an online ad with SusanvilleStuff.com. Ads are run two weeks prior and one week during the start of each new semester. We're also pursuing running ads with either Pandora or Spotify in our local market.



LASSEN COMMUNITY COLLEGE

WELDING TECHNOLOGY

Learn a trade and the skills necessary to land a well-paying job!

- Job Placement Assistance
- Degree and Certificates offered in Welding Technology
- A.W.S. Welding Qualification Tests offered on schedule 80 pipe and plate up to 1"

- Beginning and advanced welding processes and classes available in:
 - Oxyacetylene
 - Shielded Metal Arc Welding (Stick)
 - Gas Metal Arc Welding (MIG)
 - Flux Core Arc Welding
 - Gas Tungsten Arc Welding (TIG)

FALL 2018 CLASSES BEGIN AUGUST 20TH
Last day to sign up for classes is August 31!

For more information, contact
KORY KONKOL
Welding Instructor,
Certified Welding Inspector,
Certified Welding Educator
(530) 251-8887
or email
kkonkol@lassencollege.edu

www.lassencollege.edu
Admissions & Records 530.251.8808



Lassen College
from here, you can go anywhere
www.lassencollege.edu
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530-257-6181

State of the Welding Program

Item: II. F - Recruiting/Outreach

Recruiting and outreach is a major part of any career and technical education (CTE) program and is necessary for its viability. Below is a list of our involvement in facilitating the growth of the welding program through these methods.

In the spring of 2013 I became a merit badge counselor for the Boy Scouts in the area of welding. Since then we've hosted two events and helped seven scouts earn their merit badge in welding. Most recent, (summer 2014) I was able to help a scout with the welding/fabrication portion of his Eagle Scout project.

Spring 2018, I visited Modoc High School's welding department. During the visit, I was able to talk with students about our program and demonstrate the Gas Tungsten Arc Welding (GTAW) process with equipment that was brought from LCC.

Other outreach includes the following:

- Welding demonstrations to 7th graders at Diamond View school
- Hosting the welding portion of the Ag mechanics contest each fall at LCC
- Participate in the Discover Lassen College day as well as other events, which include visits from other schools.
- Visits to Lassen High School to talk about our welding program and its opportunities. In addition, the LCC'S welding shop has been used for practice by competing Ag/mechanic students.

Discussion Items

Item: III. A - Curriculum – Updating/removing/replacing current course offerings

Our current core course offerings have been in place well before I became a full-time instructor in the fall of 2010. Since then, I've modified, inactivated, and created new classes to keep the curriculum relevant with industry needs, but now its time for a major overhaul. First, is to get away from the practice of stacking classes (see Pg. 7 for explanation of stacking). Second, is to add a lecture component to classes that were a lab only. With that said, I would like to propose the following changes.

- WT-36 - Proposal, inactivate our beginning oxy-acetylene welding (OAW) course. A new welding course will be created that will encompass OAW as well as shielded metal arc welding (SMAW). This new course will be structured to articulate with area high schools.
- WT-37 – This is our beginning three-unit SMAW lab only course. Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). Objectives – Using SMAW 6010 and 7018 welding electrodes to weld lap, corner, T-joints and groove welds in the vertical and overhead positions.
- WT-38 – This is our beginning three-unit Gas Metal Arc Welding (GMAW) and Flux Core Arc Welding (FCAW) lab only course. Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). Objectives would remain the same, with the exception of adding open root GMAW to plate.
- WT-39 - This is our beginning three-unit Gas Tungsten Arc Welding (GTAW) lab only course. Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). No other changes.
- WT-40 – Advanced oxy-acetylene welding. Proposal is to inactivate the class.
- WT-42 – This class practices SMAW open root groove welds using 6010 and 7018 electrodes. Only one proposed change is to add the following objective - back gouging to the root pass followed with a back weld.

- WT-43 – This class practices GTAW open root groove welds. **No change.**
- WT-44 – This is our advanced GMAW and FCAW (running dual shield T-1 wire) three-unit lab only class. **Proposal is to offer it as a 0.5 -1 unit lecture/2-2.5 unit lab course (total 3-units). Objectives – continue with GMAW spray and pulse on steel, but add aluminum pulse welding and GMAW welding of pipe. FCAW dual shield would be removed from objectives and added to a new course.**
- WT-45 – This is our advanced GTAW class. **Proposal is to inactivate the course.**
- WT-20 – This is our beginning pipe welding class, where 1G open-root pipe and plate work in all positions is performed using SMAW 6010/7018 electrodes. **Proposal is to remove the plate-welding component and add 2G pipe. Hand beveling of the pipe will also be a component before students are allowed to use more automated methods.**
- WT-21 – This is our second pipe welding class in a series of four. **Proposal is to change the objectives, where pipe welding in the 5G and 6G welding positions are covered using SMAW 6010/7018 electrodes.**
- WT-22 – This is our third pipe welding class in a series of four. **Proposal is to replace the current objectives with pipe welding in all positions (1G, 2G, 5G, 6G) using GTAW for the root pass followed by SMAW 7018.**
- WT-23 – This is our last pipe welding class in a series of four. The current objectives are what are being proposed for WT-22. **Proposal is to create a specialty pipe welding class that covers pipe in the 4" and smaller diameters.** The GTAW and GMAW processes will be used to complete the pipe from the root out to the cover pass.
- IT-22 – This is our safety class. **Proposal is to upgrade this class to an Occupational Safety and Health Administration (OSHA) 10 standard.** OSHA 10 cards to be given at completion (passing).
- IT-72 – This is our facilities maintenance class. **No change**

Discussion Items

Item: III. B – New Courses

The welding industry continues to evolve, and one such area is in advanced manufacturing. Some areas of advanced manufacturing include: robotic welding, computer numerically controlled (CNC) plasma cutting, CNC press brake, computer aided design (CAD) and 3D printing. In order to keep up with the changing industry the following new classes are being proposed.

- Beginning and advanced classes in robotic welding
- Beginning and advanced classes in CNC plasma cutting
- CAD, beginning and advanced using SolidWorks
- G-code
- 3D printing
- CNC press brake

The following are new welding courses to replace the proposed inactivated ones.

- A new entry- level welding course that will articulate with area high schools. SMAW and OAW processes would be used, thus replacing WT-36
- A new welding course that will focus on using T-1 and T-8 wires for welding T-joints and groove welds in all positions. These wires are used in heavy equipment manufacturing and repair as well as bridge/building construction. T- 8 is seismic rated.
- 0.5 – 1 unit layout and pattern making class for pipe welding
- 1 unit American Welding Society (AWS) D1.1 code class

Discussion Items

Item: III. C – Scheduling

Presently, all of our 30 and 40 series as well as our 20 series welding classes are all stacked when scheduled. The purpose of this, as mentioned earlier, was to guarantee classes would not be cancelled due to low enrollment such as if they were offered individually. I believe that once we got on a structured pathway to a certificate or degree, the individual class offerings would fill. This would especially be true if there were no other welding classes offered, unlike there are now. Another problem with the stacked classes is that there's a loss of comradery and competition when everyone is working on different objectives.

Proposal is to stop stacking the welding classes when scheduling.

Discussion Items

Item: III. D – Offering a new Advanced Manufacturing certificate

This proposal would be to offer a new certificate in Advanced Manufacturing. This certificate would be made up of the following classes:

- Beginning robotic welding
- Advanced robotic welding
- Beginning CNC plasma cutting
- Advanced CNC plasma cutting
- Beginning CAD (SolidWorks)
- Advanced CAD (SolidWorks)
- WT-38, GMAW – pre and or co-requisite for beginning robotic welding.
- IT-22, Safety class offering OSHA 10
- WT-51 blueprint reading for welders
- G-code
- 3D printing?
- CNC press brake?

Discussion Items

Item: III. E – Equipment/Facility needs

A lot has been done to improve the quality of the students learning experience, but there is still more that needs to be done. That said, the following is a proposal of equipment and facility needs.

- Improve ventilation in the shop
- Improve lighting in the shop
- Run wiring and add electrical drops to new welding booths in construction trades
- Install ground rod for our CNC plasma cutting table
- Continue the purchase of multi-process welding machines, to replace 20 plus year old single welding process units.
- Purchase 3d Printer – if needed for the certificate in advanced manufacturing
- Purchase CNC press brake - if needed for the certificate in advanced manufacturing

Discussion Items
Item: III. F – Other Advisory Committee
recommendations

Members of the advisory committee, please use this space to offer additional recommendations in the following, but not limited to, areas.

- Advertising
- Outreach

Recommendations

Item: IV Topics for Your Consideration Discussion and Vote

From Item: III. A - Curriculum – Updating/removing/replacing current course offerings on pages 12 and 13. Please let us know if you agree, disagree or would like to make a recommendation for the following proposed changes to these classes, highlighted in yellow. For a more detailed description of our course offerings, see pages 26-28 taken from our 2018-2019 course catalog.

WT-36

Agree

Disagree

Recommendation -

WT-37

Agree

Disagree

Recommendation -

WT-38

Agree

Disagree

Recommendation -

WT-39

Agree

Disagree

Recommendation -

WT-40

Agree

Disagree

Recommendation -

Recommendations - Continued Curriculum

WT-42

Agree

Disagree

Recommendation -

WT-43

Agree

Disagree

Recommendation -

WT-44

Agree

Disagree

Recommendation -

WT-45

Agree

Disagree

Recommendation -

WT-20

Agree

Disagree

Recommendation -

WT-21

Agree

Disagree

Recommendation -

Recommendations - Continued Curriculum

WT-22

Agree

Disagree

Recommendation -

WT-23

Agree

Disagree

Recommendation -

IT-22

Agree

Disagree

Recommendation -

IT-72

Agree

Disagree

Recommendation -

Recommendations - Continued

New Courses

From Item: III. B – New Courses page 14. Please let us know if you agree, disagree or would like to make a recommendation for the following new class offerings highlighted in **yellow**.

Beginning and advanced classes in robotic welding

Agree

Disagree

Recommendation -

Beginning and advanced classes in CNC plasma cutting

Agree

Disagree

Recommendation -

CAD, beginning and advanced using SolidWorks

Agree

Disagree

Recommendation -

G-Code

Agree

Disagree

Recommendation -

3D Printing

Agree

Disagree

Recommendation -

Recommendations - Continued New Courses

CNC Press Brake

Agree

Disagree

Recommendation -

The following are new welding courses to replace the proposed inactivated ones.

A new entry- level welding course that will articulate with area high schools. SMAW and OAW processes would be used, thus replacing WT-36

Agree

Disagree

Recommendation -

A new welding course that will focus on using T-1 and T-8 wires for welding T-joints and groove welds in all positions. These wires are used in heavy equipment manufacturing and repair as well as bridge/building construction. T- 8 is seismic rated.

Agree

Disagree

Recommendation -

A 0.5 – 1 unit layout and pattern making class for pipe welding

Agree

Disagree

Recommendation -

A 1 unit AWS D1.1 code class

Agree

Disagree

Recommendation -

Recommendations - Continued Scheduling

From Item: III. C - Scheduling on page 14. Please let us know if you agree, disagree or would like to make a recommendation for the following proposed change highlighted in yellow.

Proposal is to stop stacking the welding classes when scheduling.

Agree

Disagree

Recommendation -

Recommendations - Continued Offering a new Advanced Manufacturing certificate

From Item: III. D - Offering a new Advanced Manufacturing certificate page 15. Please let us know if you agree, disagree or would like to make a recommendation for the following proposed change highlighted in yellow.

Proposal is to offer a Certificate in Advanced Manufacturing that is made up of the following classes on page 15.

Agree

Disagree

Recommendation -

Recommendations - Continued Equipment/Facility needs

From Item: III. E – Equipment/Facility needs page 15. Please let us know if you agree, disagree or would like to make a recommendation for the following proposed equipment and facility needs highlighted in **yellow**.

Agree

Disagree

Recommendation -

Signature _____

Date _____

Print _____

E-mail _____

Welding Technology

DEGREE

Associate in Science in Welding Technology

CERTIFICATE OF ACCOMPLISHMENT

Welding Technology

CERTIFICATES OF ACHIEVEMENT

Welding Technology Two-Year Plan

Welding Technology One-Year Plan

The Welding Technology Program is designed to prepare the student with the necessary skills to acquire an entry-level position in the various industries that require the different welding processes available through the Program. The Welding Program is also designed to assist those already employed in the industry and those in the community to improve their skills. The Program offers course work in Oxyacetylene Welding (OAW), Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW) and American Welding Society (AWS) qualifications in plate and pipe welding. The curriculum is updated with the assistance of an industry advisory committee.

As a Welding major, you will:

- Study a general welding curriculum including welding plate and pipe and qualifications in multiple welding processes to American Welding Society standards.
- Develop leadership and communication skills.
- Identify the welding careers you are most interested in and build a course of study to better qualify you to succeed in that career.

Career Options

Welding Technician
 Sales
 Inspection
 Supervision & Management
 Aerospace
 Welding Engineering
 Construction
 Trucking & Automotive
 Welding Instructor

Some positions however require a four-year degree for which LCC's program is a good base for transfer.

Program Highlights

- Classes for beginning through advanced welders.
- Welding qualifications through the American Welding Society.
- Practical hands-on training with classroom theory.
- Short term courses.

Associate Degree and Certificate of Achievement in Welding can be completed within two (2) years.

Internships in welding are available for students interested in Work Experience opportunities.

Associate in Science Degree Welding Technology

Total Units for the Associate in Science Degree: 60 Units

Required Core Courses: 24 Units

Course No	Course Title	Units
WT 20	Power Plant and Field Pipe Welding I	3.0
WT 21	Power Plant and Field Pipe Welding II	3.0
WT 22	Power Plant and Field Pipe Welding III	3.0
WT 23	Power Plant and Field Pipe Welding IV	3.0
WT 36	Welding Theory and Practice: Oxyacetylene	3.0
WT 37	Welding Theory and Practice: Shielded Metal Arc Welding	3.0
WT 38	Welding Theory and Practice: Gas Metal Arc Welding	3.0
WT 39	Welding Theory and Practice: Gas Tungsten Arc Welding	3.0

Required Electives: 18 Units

BUS 25	Small Business Management	3.0
CA 31	Computer Applications I	2.0
IT 22	Operations Maintenance and Safety	1.0
IT 72	Facilities Maintenance: Welding	2.0
WT 40	Oxyacetylene Welding	3.0
WT 42	Intermediate Shielded Metal Arc Welding	3.0
WT 43	Advanced Shielded Metal Arc Welding	3.0
WT 44	Gas Metal Arc Welding	3.0
WT 45	Gas Tungsten Arc Welding	3.0
WT 51	Blueprint and Symbol Reading for Welders	2.0

General Education Requirements: 18 Units

Program Student Learning Outcomes

Upon completion of the **Associate in Science Degree Welding Technology**, the student will be able to:

1. Demonstrate the safe setup and application of various welding and cutting processes to specific metals and joint designs, which meet or exceed industry standards and the American Welding Society Structural Welding Code, D1.1.

Certificate of Achievement: Welding Technology - Two Year

Total Units for the Two-Year Certificate of Achievement: 44 Units

Required Core Courses: 29 Units

Course No	Course Title	Units			
IT 22	Operations Maintenance and Safety	1.0	WT 39	Welding Theory and Practice: Gas	3.0
IT 72	Facilities Maintenance: Welding	2.0		Tungsten Arc Welding	
WT 20	Power Plant and Field Pipe Welding I	3.0	WT 51	Blueprint and Symbol Reading for	2.0
WT 21	Power Plant and Field Pipe Welding II	3.0		Welders	
WT 22	Power Plant and Field Pipe Welding III	3.0		Required Electives: 15 Units	
WT 23	Power Plant and Field Pipe Welding IV	3.0	BUS 25	Small Business Management	3.0
WT 36	Welding Theory and Practice: Oxyacetylene	3.0	CA 31	Computer Applications I	2.0
			WT 40	Oxyacetylene Welding	3.0
WT 37	Welding Theory and Practice: Shielded Metal Arc Welding	3.0	WT 42	Intermediate Shielded Metal Arc Welding	3.0
WT 38	Welding Theory and Practice: Gas Metal Arc Welding	3.0	WT 43	Advanced Shielded Metal Arc Welding	3.0
			WT 44	Gas Metal Arc Welding	3.0
			WT 45	Gas Tungsten Arc Welding	3.0

Program Student Learning Outcomes

Upon completion of the **Certificate of Achievement in Welding Technology Two-Year**, the student will be able to:

1. Demonstrate the safe setup and application of various welding and cutting processes to specific metals and joint designs, which meet or exceed industry standards and the American Welding Society Structural Welding Code, DI.1.

Certificate of Achievement: Welding Technology - One Year

Total Units for the One-Year Certificate of Achievement: 23 Units

Required Core Courses: 17 Units

Course No	Course Title	Units		Welders	
IT 22	Operations Maintenance and Safety	1.0		Required Electives: 6 Units	
IT 72	Facilities Maintenance: Welding	2.0	WT 36	Welding Theory and Practice:	3.0
WT 20	Power Plant and Field Pipe Welding I	3.0		Oxyacetylene	
WT 21	Power Plant and Field Pipe Welding II	3.0	WT 40	Oxyacetylene Welding	3.0
WT 37	Welding Theory and Practice: Shielded Metal Arc Welding	3.0	WT 42	Intermediate Shielded Metal Arc Welding	3.0
WT 38	Welding Theory and Practices: Gas Metal Arc Welding	3.0	WT 43	Advanced Shielded Metal Arc Welding	3.0
			WT 44	Gas Metal Arc Welding	3.0
WT 51	Blueprint and Symbol Reading for	2.0	WT 45	Gas Tungsten Arc Welding	3.0

Program Student Learning Outcomes

Upon completion of the **Certificate of Achievement in Welding Technology One-Year**, the student will be able to:

1. Demonstrate the safe set-up and application of Oxyacetylene Cutting (OAC), Oxyacetylene Welding (OAW), Carbon Arc Cutting (CAC), Gas Tungsten Arc Welding (GTAW), Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW), and Shielded Metal Arc Welding (SMAW) to ferrous, alloy and nonferrous metals.
2. Apply the SMAW, GTAW, GMAW, and FCAW processes to steel plate and pipe that meet or exceed industry standards and the American Welding Society Structural Welding Code, DI.1.

Certificate of Accomplishment: Welding Technology

Total Units for the Certificate of Accomplishment Welding Technology: 12 Units

Required Core Courses: 9 Units

Course No	Course Title	Units	Required	Electives: 3 Units	
WT 20	Power Plant and Field Pipe Welding I	3.0	IT 22	Operations Maintenance and Safety	3.0
WT 37	Welding Theory and Practice: Shielded Metal Arc Welding	3.0	IT 72	Facility Maintenance: Welding	2.0
			WT 36	Welding Theory and Practice	3.0
WT 38	Welding Theory and Practice: Gas Metal Arc Welding	3.0	WT 51	Blueprint and Symbol Reading for Welders	2.0

Program Student Learning Outcomes

Upon completion of the **Certificate of Accomplishment in Welding Technology**, the student will be able to:

1. Demonstrate the safe set-up and application of Oxyacetylene Cutting (OAC), Oxyacetylene Welding (OAW), Carbon Arc Cutting (CAC), Gas Tungsten Arc Welding (GTAW), Gas Metal Arc Welding (GMAW), Flux Cored Arc Welding (FCAW), and Shielded Metal Arc Welding (SMAW) to ferrous metals.

SPANISH

SPAN 1 - First Course in Spanish 4.0 units

**CSU/UC/CSU GE Area C2/IGETC
Area 6A**

**Associate Degree Area C
C-ID Span 100**

Recommended Preparation:

Successful completion of ENGL105 or equivalent assessment placement.

3 hours lecture/2 hours lab

This introductory course teaches beginning language acquisition in a cultural context through listening, speaking, reading and writing. The students will interact with authentic language in cultural context.

SPAN 2 - Second Course in Spanish 4.0 units

**CSU/UC/CSU GE Area C2/IGETC
Area 3B, 6A**

Associate Degree Area C

Prerequisite: SPAN 1 First Course in Spanish

3 hours lecture/2 hours lab

A continuation of beginning Spanish in the study of the fundamentals of Spanish grammar with practice in pronunciation, understanding, speaking, reading, and writing. A more in depth presentation of Hispanic culture, geography, and history is included.

SPAN 50 - Conversational Spanish 3.0 units

Associate Degree Area C

Recommended Preparation:

Successful completion of ENGL105 or equivalent assessment placement.

3 hours lecture

Designed to give students abundant practice in developing oral communication skills in Spanish. Topics providing basis for discussion and prepared talks will include everyday life situations, current events, Latin American and Spanish culture.

SPEECH

SPCH 1 - Fundamentals of Speech Communication 3.0 units

**CSU/UC/CSU GE Area A1/IGETC
Area 1C**

**Associate Degree Area D2
C-ID COMM 110**

Prerequisite: ENGL 1 College

Composition

3 hours lecture

Theory and techniques of public speaking

in democratic society. Discovery, development, and criticism of ideas in public discourse through research, reasoning, organization, composition, presentation, and evaluation of various types of speeches including informative and persuasive speeches. This course has been approved for hybrid delivery.

TUTORING

TUTR 50 - Fundamentals of Peer Tutoring 0.5 unit

Recommended Preparation: Successful completion of ENGL105 or equivalent assessment placement.

1 hour lecture (9 weeks)

This course is designed for peer tutors working in the college tutorial center. This course will focus on the practical skills necessary to function effectively as a peer tutor in the student's chosen areas of study. Students will participate in supervised tutoring in the College's Learning Center.

VOCATIONAL NURSING

See Nursing

WELDING TECHNOLOGY

WT 20 - Power Plant and Field Pipe Welding I 3.0 units CSU

Recommended Preparation: Successful completion of ENGL105 or equivalent assessment placement.

1 hour lecture/6 hours lab (R)

This is the first of a four-course sequence to prepare students in power plant and field welding. This course deals with shop safety, oxyacetylene cutting, air carbon arc cutting, shielded metal arc welding and pipe welding. Pipe coupons will be prepared and welded in the horizontal rolled (1G) position. American Welding Society (AWS) welding qualifications on plate and pipe will be prepared and completed. Repeatable as required for certification by the American Welding Society D1.1 Section 4.1.3. (Instructor authorization required for course repetition.)

WT 21 - Power Plant and Field Pipe Welding II 3.0 units CSU

Recommended Preparation:

Successful completion of ENGL105 or equivalent assessment placement.

1 hour lecture/6 hours lab (R)

This is the second course of a four-course sequence dealing with pipe welding, in the 2G and 5G positions, using the shielded metal arc welding process. Gas tungsten arc welding (GTAW) will be introduced to prepare the student for welding on pipe using the GTAW process. American Welding Society (AWS) welding qualifications will be prepared and completed on one inch plate in the 3G and 4G positions. Repeatable as required for certification by the American Welding Society D1.1 Section 4.1.3. (Instructor authorization required for course repetition.)

WT 22 - Power Plant and Field Pipe Welding III 3.0 units CSU

Recommended Preparation: Successful completion of ENGL105 or equivalent assessment placement.

1 hour lecture/6 hours lab (R)

This is a fundamental class dealing with pipe welding in the 6G position using the shielded metal arc welding process. Joint designs will be performed using the gas metal arc welding and the gas tungsten arc welding process in preparation for welding root passes on pipe. Welding symbols presented and reviewed in order to enable students to interpret welding blueprints. This is the third of a four-course sequence to prepare students for power plant and field pipe welding. American Welding Society (AWS) qualifications in GTAW, GMAW, and FCAW will be prepared and completed. Repeatable as required for qualification by the American Welding Society D1.1 Section 4.1.3. (Instructor authorization required for course repetition.)

WT 23 - Power Plant and Field Pipe Welding IV 3.0 units CSU

Recommended Preparation: Successful completion of ENGL105 or equivalent assessment placement.

1 hour lecture/6 hours lab (R)

This class deals with pipe welding in the 2G (vertical fixed) and 5G (horizontal fixed) positions using gas tungsten arc welding for the root pass and shielded metal arc welding for the fill and cover

passes. Aluminum and stainless steel welding using gas tungsten arc welding will also be covered. American Welding Society (AWS) pipe qualification will be prepared and completed in the 5G and 6G positions. Repeatable as required for qualification by the American Welding Society (AWS) D1.1 Section 4.1.3. (Instructor authorization required for course repetition.)

WT 31 – GTAW for Gunsmiths
3.0 units
CSU

1 hour lecture/6 hours lab
This course is designed to develop the manipulative skills, technical knowledge and application of the tungsten arc welding (GTAW) process as they relate to firearm repair.

WT 32 – Advanced GTAW for Gunsmiths
3.0 units
CSU

Recommended Preparation: Concurrent enrollment or credit for **WT 31 GTAW for Gunsmiths** or instructor approved work experience/classes.

1 hour lecture/6 hours lab
This course is designed to provide an opportunity for the student to further their understanding in applying the specialized gas tungsten arc welding (GTAW) process to aluminum and stainless steel as it relates to firearm repair. Students will work on the design, function and repair of gunparts and related equipment using the GTAW process.

WT 36 - Welding Theory and Practice – Oxyacetylene
1.0-3.0 units
CSU

9 hours lab (R)
This is an elective welding course where students will apply the oxyacetylene welding (OAW) and oxyacetylene cutting (OAC) processes to selected projects. This course may be taken for a total of three enrollments, not to exceed three units. This course has been approved for open entry/open exit.

WT 37 - Welding Theory and Practice-Shielded Metal Arc Welding
1.0-3.0 units
CSU

9 hours lab (R)
This is an elective welding course where students will apply the shielded metal arc welding (SMAW) processes to selected projects. This course has been approved for open entry/open exit. This course may be taken as required for certification by the American Welding Society D1.1

Section 4.1.3.

WT 38 - Welding Theory and Practice - Gas Metal Arc Welding
1.0-3.0 units
CSU

9 hours lab (R)
This is an elective welding course where students will apply the gas metal arc welding (GMAW) process to selected projects. This course has been approved for open entry/open exit. This course may be taken as required for qualification by the American Welding Society D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

WT 39 - Welding Theory and Practice - Gas Tungsten Arc Welding
1.0-3.0 units
CSU

9 hours lab (R)
This is an elective welding course where students will apply the gas tungsten arc welding (GTAW) process to selected projects. This course has been approved for open entry/open exit. This course may be taken as required for qualification by the American Welding Society D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

WT 40 - Oxyacetylene Welding
3.0 units
CSU

9 hours lab
This is a beginning elective welding course designed to develop the manipulative skills, technical knowledge and application of the oxyacetylene welding and cutting process.

WT 42 - Intermediate Shielded Metal Arc Welding
3.0 units
CSU

9 hours lab (R)
This is the second in a three course series of fundamental elective classes dealing with the shielded metal arc welding process (SMAW). Filler rods will be selected and applied to joint designs which meet industrial specifications. Repeatable as required for qualification by the American Welding Society D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

WT 43 - Advanced Shielded Metal Arc Welding
3.0 units
CSU

9 hours lab (R)
This is the last in a three-course sequence of fundamental elective classes dealing with the shielded metal arc welding (SMAW) process. Specialized

filler rods will be selected and applied to joint designs which meet industrial standards. Repeatable as required for qualification by the American Welding Society D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

WT 44 - Gas Metal Arc Welding
3.0 units
CSU

9 hours lab (R)
This course is designed as an elective class to develop the manipulative skills, technical knowledge and application of the gas metal arc welding (GMAW) spray transfer process and flux core arc welding with gas (FCAW-G). The processes will be applied to recognized joint designs on ferrous materials. GMAW will also be explored in welding nonferrous materials (aluminum). Repeatable as required for qualification by the American Welding Society (AWS) D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

WT 45 - Gas Tungsten Arc Welding
3.0 units
CSU

9 hours lab (R)
This is an elective course designed to develop the manipulative skill, technical knowledge and application of the gas tungsten arc welding (GTAW) process. The process will be applied to selected joint designs on ferrous and nonferrous materials. Repeatable as required for qualification by the American Welding Society D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

WT 49A - Introduction to Welding Technology Work Experience
1.0-8.0 units
CSU

Associate Degree Area E1
Recommended Preparation: Successful completion of ENGL105 or equivalent assessment placement.

5-40 hours lab (R)
This course enables students with educational or occupational goals in Welding Technology, who are working in the field of welding to build related job specific skills through individualized learning objectives, and increase transferable workplace skills by completing a workplace success module available online or through correspondence. This course is the first course in a two course sequence. Students initially enrolling in any Work Experience course enroll in an "Introduction to" Work Experience course in their chosen discipline. Subsequent

INDUSTRIAL TECHNOLOGY

IT 22 - Operations, Maintenance and Safety

1.0 unit

CSU

Recommended Preparation: Successful completion of ENGL105 or equivalent assessment placement.

1 hour lecture

This course integrates personnel safety, equipment protection and safety tagging procedures with operational and maintenance events expected in a power generation, process or geothermal plant. Specific topics include material and safety data sheets (MSDS), hazardous materials (HAZ/MAT), chemical alert placards and confined space procedures. This course has been approved for live-interactive television instruction.

ART 50 – Welding for Artists (Design and Fabrication)

2.0 unit

Co-requisite: ART-50 Welding for Artists (History of Welded Sculpture)

102 hours lab (R)

Students will become proficient in the use of oxy-acetylene, arc/stick, TIG, and MIG welding techniques in addition to metal cutting tools found in a welding studio. Students will also become knowledgeable with stationary tools common to a welding shop such as: breaks, shears, bench grinders, hand grinders and drills. This class will focus on welding and metal fabrication as a fine art medium.

IT 72 - Facilities Maintenance – Welding 2

2.0 units

6 hours lab

This course is designed to prepare students with basic, through increasingly advanced, skills covering aspects of maintenance and repair procedures utilizing: soldering, brazing, welding, and joining of PVC. Field work will include fabrication, as well as maintenance and repair of equipment and facilities utilizing a portable shop.

ART-50 should read WT-50