Welding Technology Program
IPR
2013

IPR completed by:
Kory Konkol

Welding Technology Program
Section One: Academic Planning

I. Program Objectives

Description:

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 coursework in Oxyacetylene Welding (OAW), Gas Metal Arc Welding (GMAW), Flux Core Arc Welding (FCAW), 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.

Evaluation:

The Welding Technology Program student learning outcomes directly relate to institutional student learning outcomes. (See appendix: A)

The Welding Technology Program objectives fall within the vocational mission of California Community Colleges.

Summary of annual update: All areas of the annual update have been met with the exception of item #2 under equipment. It was discovered that the welding program already had a functioning version of this item. Also, an ongoing initiative is to become an American Welding Society (AWS) testing facility. (See appendix: B for annual update)

Promotional material/advertising - currently a welding ad is placed in the Lassen Times two weeks prior to the start of a semester. This method of advertising has been the most effective as determined by our students' feedback. (For advertising Appendix: C)

Recommendations/Plan:

Prioritized Recommendations Requiring Institutional Action for Inclusion in Education Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome

Reevaluate the Welding Technology Program objectives at the next scheduled Welding Advisory Committee meeting and at the next scheduled Welding Technology program review date.

Welding Technology Program
Section One: Academic Planning

II. Student Outcomes

A. Trends and patterns in student outcomes

Description:

Information gathered from the Bureau of Labor Statistics:

1. Welders, Cutters, Solderers, and Brazers (See appendix: D)
2. Welding, Soldering, and Brazing Machine Setters, Operators and Tenders. (See appendix: D)

The following data has not been provided by Academic Services:

1. Transfer numbers for the last four years 2009-12
2. Job placement data

The Office of Instruction has provided the following data:

1. The number of degrees and certificates awarded for the last four years 2009-12 (see highlighted area in appendix: E)
2. Retention data for the last four years 2009-12 (see highlighted area in appendix: E)

Welding Scholarship

A welding technology program scholarship was implemented in the spring of 2013. The intent of the scholarship is to attract more students into pursuing an A.S. degree in welding. Hence, the scholarship would only be available to those students.

Evaluation:

1. Information provided by the Bureau of Labor Statistics continues to show the need for welders in all areas. Other studies show that there are more individuals retiring from this trade than are entering it.

2. The number of degrees and certificates awarded in the Welding Program does not reflect an accurate picture of student success and outcomes. A more realistic measure has been welding students who attempt and successfully complete an American Welding Society (AWS) welding qualification test. This is defining student outcomes and success by standards accepted in the welding industry and follows an accepted welding code (AWS D1.1). (See below for the years 2009-2012 data) Side note, for the calendar year 2013 the current total is 95.

	Calendar Year 2009	Calendar Year 2010	Calendar Year 2011	Calendar Year 2012
Shielded Metal Arc Welding	62	53	6	21
Gas Tungsten Arc Welding	10	8	10	6
Gas Metal Arc Welding	68	59	38	43
FCAW -G	7	8	0	2
FCAW-S	44	19	16	13
SMAW with GTAW	2	5	0	2
TOTAL	193	152	70	87

Source: Certified Welding Inspector Records

3. In general, students enrolled in the welding program do not seek the degree option. Many of them seek to gain skills that will make them employable, often taking only one semester of classes. Then others take classes for personal reasons that are not seeking a welding career. Below is a letter from one of my students reinforcing the point.

"Hey Kory, Kirby here! Havent talked to you in a while and just wanted to say whats up!

Since I stopped going to school I have found myself doing various things, worked at the junkyard up here in chester for quite some time, got some experience and made some money; now Im off to southern California... Ive got a job interview/ weld test in Paso Robles (near san luis obispo) at a "bearing and hydraulic company"! Ill be the only welder there! It should be a good oppurtunity for some more experience and better pay- starts at $15 with full benefits! Anyway, I just wanted to thank you for everything, you taught me enough in my short time of schooling to go out and work/weld in the real world, even in this bad economy I have had no problem surviving. Have a good one and I hope everything is going good in the shop! "

II. Student Outcomes Continued

Evaluation:

4. Productivity data (qualification tests completed) has been included in this document as a measure of student outcomes and success. This data has also been included in the LCC Educational Master Plan.
5. Due to the lack of data regarding job placement, I have implemented a contract agreement that is given out to my students at the beginning of the semester (see appendix: F). The form provides contact information that I can use to keep in touch with my students. In the future I will use this technology to gather the necessary data.

6. To date, it's too early to determine the effectiveness of offering the welding scholarship. One of the requirements in order to be eligible for the welding scholarship is to maintain a "C" or better in all classes required to achieve an A.S. degree. Unfortunately, that bar has been too high for some.

7. Retention data appears consistent with other LCC programs.

Recommendations/Plan:

Assistance is needed in order to continue offering the welding scholarship and manage the paperwork involved in fundraising. Current scholarship money available is a little over $3000.00, but in order to continue offering the scholarship more money will need to be raised.

Welding Technology Program
Section One: Academic Planning

II. Student Outcomes

B. Student Learning Outcome Assessment

Description:

- See (Appendix: G) for SLO results.

Evaluation:

Welding is a performance based (hands-on) course. SLO results continually show that any lack of work completed directly correlates to a lack of attendance. Otherwise, no steps were taken as a result of the assessment results.

Recommendations/Plan:

Reevaluate the Welding Technology Program assessment outcomes at the next scheduled program review date.

Welding Technology Program
Section One: Academic Planning

II. Student Outcomes

C. Student Evaluation Summary

Description:

The student evaluation summary can be found in (Appendix: H). The evaluation summary provided by the office of instruction in Excel format needs to be revised to a more user friendly version.

Evaluation:

Scheduling – 85.9% say there is no scheduling conflict w/particular course. 83.6% say that it met their schedule.
Educational Goal – 74.3% AA/AS degree (includes gunsmithing students) 71.4% AA/AS degree were welding students
Facilities/Equipment – 45% gunsmithing students say there was sufficient equipment, 40% disagreed
Also mentioned was interest in a computer numerically controlled (CNC) plasma cutter.

The evaluation did point out some areas that could be improved upon such as: newer chairs (height appropriate), better lighting and ventilation in the welding booths and more welders for the students.

The Lassen Community College Welding Technology Program appears to meet the educational needs of welding students enrolled in the program with the exception of some equipment mentioned above.

Recommendations/Plan:

Upgrade, improve or install new ventilation in the welding department.

Replace broken and damaged chairs/seats (30)

Purchase additional Gas Tungsten Arc Welders to meet the number of students enrolled in the program.

Recommendations/Plan: (Continued)

Purchase a CNC plasma cutter and develop curriculum and a class around its operation.

Small improvements have been made in the areas of ventilation and lighting but not on the necessary scale. There is a great deal of work to be done, but can only be completed with the necessary funds.

Reevaluate the Welding Technology Program student evaluations at the next scheduled program review date.

Welding Technology Program
Section One: Academic Planning

III. Curriculum

A. Degrees and/or Certificates

Description:

The Welding Technology Program offers the following degree and certificates:

Associate in Science Degree in Welding Technology
Two-Year Certificate of Achievement in Welding Technology
One-Year Certificate of Achievement in Welding Technology
Certificate of Accomplishment in Welding Technology
(See appendix J) for course catalog welding degrees/certificates)

Evaluation:

The One-Year Certificate of Achievement in Welding Technology is not achievable in its current form. It is recommended that WT-22 and WT-23 be removed from the core courses. Total units required would go from 34 to 28. This will still meet the required units for a one-year certificate.

Another area that needs clarification is to change English Composition to English 1 as required by the one and two year certificates as well as the A.S. degree.

Recommend adding more choices to the list of required electives for the one and two year certificates as well as the A.S. degree. One option might be – Welding for Artists or others listed on following page under recommendations/plan.

The Welding Technology Program degree and certificates have been reviewed and endorsed by the Welding Technology Advisory Committee July 24, 2014. (See appendix: I)

Recommendations/Plan:

Reevaluate the Welding Technology Program degree and certificates at the next scheduled Welding Advisory Committee meeting.

Welding Technology Program
Section One: Academic Planning

III. Curriculum

B. Courses

Description:

Re-activated WT-31 (GTAW For Gunsmiths) and WT-32 (Advanced GTAW For Gunsmiths) on 2/19/13. WT-31 starts Fall 2013 followed by WT-32 in the spring of 2014.

Evaluation:

Each course offered within the Welding Technology Program has been reviewed for accuracy and currency (See following page).

Recommendations/Plan:

Some courses that may be developed for future instruction and be applied to a degree or certificate include: Rigging, measuring/practical and applied trigonometry, pipefitting, metallurgy and curriculum provided by Torchmate on the operation of their CNC cutting table. Two of these courses were brought up during our July 24, 2014 Advisory Board Meeting. (See Appendix I)

The Advisory committee has recommended that we limit our emphasis on using 5/32 shielded metal arc welding (SWAW) electrodes. The point was made that the industry rarely uses this particular size, so changes will be made to SLO's reflecting this.

Also, in collaboration with the art department (Randy Panfillio), we are working on re-activating WT-120, Welding for Artists'. The class would have a one hour lecture, taught by Randy Panfillio followed by a welding lab taught by myself.

In the future I would like to explore the possibility of making lectures available online through Moodle. There has been an interest among students who can't make it to an evening lecture because they rely on public transportation. This would also benefit students who live in the Chester/Westwood communities that can't make it during the winter due to road conditions.

Reevaluate the Welding Technology Program courses at the next scheduled Welding Advisory Committee meeting.

Welding Technology Program
Section One: Academic Planning

III. Curriculum

C. Scheduling and Enrollment Patterns

Description:

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

FTE data provided by the office of instruction can be found in (Appendix: K).

Schedules showing the days and times that the Welding Technology Program operates can be found in (Appendix: L)

Evaluation:

Currently, the Welding Technology Program offers classes four days a week with both morning and evening classes available. 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-31 in the Fall.

During the summer of 2013, the WT-40 series of classes were left with out an instructor. In order to continue offering the WT-40 series classes, it was necessary stack them with the WT-30 series.

The Welding Technology Program scheduling and enrollment patterns have been reviewed and endorsed by the Welding Technology Advisory Committee July 24, 2014 (See appendix: I)

III. Curriculum

C. Scheduling and Enrollment Patterns (Continued)

Recommendations/Plan:

First and foremost is to find another part time instructor to help with our class offerings. More important is to find someone who is willing to grow with the program and preferably find someone who is a certified welding inspector (CWI).

Presently the program is offering as many classes as possible with current staffing. One possible way to increase enrollment patterns (with current faculty) would be to offer lecture only classes online or by correspondence. There's also the possibility of offering a hybrid class where lectures can be completed from home through Moodle and lab in the shop.

Also, with the acquisition of the adjoining construction trades facility there is now the possibility to teach multiple classes simultaneously (non stacked classes). Currently the space is being utilized for the gunsmithing classes WT-31 and 32.

Reevaluate the Welding Technology Program scheduling and enrollment patterns at the next scheduled Welding Advisory Committee meeting.

Welding Technology Program
Section One: Academic Planning

III. Curriculum

D. Articulation/Integration of Curriculum:

Description:

Currently, Lassen High School students who enroll in the welding program receive high school credits at a ratio of 3.3:1. That is, for every one unit taken at LCC they receive three and one-third credits at LHS. I've also found out that our local charter schools have a similar agreement.

Additionally we have an articulation agreement with Lassen and Modoc High School. At present, they can earn one college unit for WT-36 and WT-37.

Evaluation:

The Welding Technology Program articulation/integration of curriculum have been reviewed and endorsed by the Welding Technology Advisory Committee July 24, 2014. (See appendix I)

Recommendations/Plan:

Reevaluate the Welding Technology Program articulation/integration of curriculum at the next scheduled Welding Advisory Committee meeting.

Welding Technology Program
Section One: Academic Planning

IV. Equipment

Description:

The Lassen College Welding Technology Program must continue to offer quality programming to attract students. This means that welding equipment must be current in technology and in good repair.
Currently, the welding equipment in the shop ranges from less than one-year to over twenty years in age. We also have 17 of the latest inverter-based welders offered from Miller, which can perform multiple welding processes.
Unfortunately, at this time, we do not have any regular maintenance or service agreements for any of our equipment. Welding equipment repairs are performed in-house and are on a case-by-case basis.

Evaluation:

An area that needs immediate attention is complying with The Division of the State Architect (DSA). Two areas that have come to my attention is the removal of a structure that is adjacent to the rear of the welding shop. This area is currently being used to prep and grind material to be welded. It provides shelter from the weather, lighting and a power source for hand tools. The second structure that needs to be removed is the mezzanine found in the construction trades building. Currently it is being used for some storage. (Terminated)

Part of becoming an accredited AWS testing facility requires that the welding technology program have the necessary equipment to perform the testing to be done. Those requirements and needs can be found in the initial on-site audit application in (appendix M), starting on page three and ending on page eight.

On a monthly basis, and not including the cost of the gas, the welding program incurs a cylinder rental fee that is over $200 dollars a month.

The student evaluation survey continues to state the need for better ventilation in the welding shop/booths. The evaluation also pointed out the need for improved lighting and stools/seats in the welding booths.

Evaluation Continued:

Also noted during my peer evaluation was the poor acoustics found in the classroom

The need for better ventilation has been identified and endorsed by the Welding Technology Advisory Board Committee (see appendix I). The need for better ventilation has also been identified in section IIC - student evaluation summary.

Recommendations/Plan:

- Recommend that the spring 2014 IT-72 class remove the structure from the rear of the welding shop. This will meet DSA compliance. The class can also construct replacement workbenches to be positioned along the North wall. (Terminated) (See appendix B)

- New electrical outlets will need to be installed along the North wall along with fluorescent lighting. This will replace the current area being used by the students to prep and grind material to be welded. (Terminated) (See appendix B)

- Contractor or maintenance department will need to remove mezzanine located in the construction trades building to meet DSA compliance. (Terminated) (See appendix B)

- Electrical outlets mounted to the underside of the mezzanine will need to be relocated. The current outlets are being utilized by eight welding machines, which are used for gunsmithing classes. (Terminated) (See appendix B)

- Continue working on meeting those requirements necessary to become certified testing facility (found in the on-site audit)

- Develop a welding equipment maintenance schedule that meets the requirements outlined in the on-site audit.

- Recommend the purchasing of our own cylinders to avoid paying rental fees.

- Continue to improve ventilation and lighting through the purchasing of necessary equipment and modifying existing systems.

- Purchase a CNC plasma cutter as noted in student evaluation survey.

Recommendations/Plan: (Continued)

- Replace old and damaged stools.
- Install carpeting in the classroom to eliminate poor acoustics.

IV. Prioritized Recommendations for Implementation by Program Staff

- Remove 5/32" welding electrodes from SLO's where applicable.
- Remove WT-22 and WT-23 from one year certificate of achievement.
- Develop new courses: Metallurgy, blueprint reading, rigging, pipefitting, measuring/practical and applied trigonometry.
- Improve, modify or construct new ventilation.

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome
1	AWS certified testing facility	2015-2016	$2300.00	AWS accreditation
1	Develop equipment maintenance schedule	2015-2016	$1500.00	AWS accreditation
1	Ventilation	2015-2016	$25,000.00	Safety
1	Purchase cylinders	2015-2016	$7500.00	
1	CNC plasma cutter	2015-2016	$20,000.00	
1	Replace chairs/stools	2015-2016	$1100.00	Safety
1	Carpet classroom	2015-2016	$1000.00	New carpet
1	Purchase GTAW machines	2015-2016	$25,000.00	
3	Hire adjunct faculty	2015-2016		
4	Personnel welding scholarship	2015-2016		

Welding Technology Program
Section One: Academic Planning

V. Outside Compliance Issues

Not applicable to the welding program with the exception of the recent DSA compliance issues. These issues are addressed in the previous section IV Equipment. (No longer relevant) (See appendix B)

Welding Technology Program
Section Two: Human Resource Planning

A. Program Staffing

Description:

The Lassen College Welding Technology Department has one full-time faculty, one part-time faculty and one part-time instructional aide.

Evaluation:

At the current level of staffing, the opportunity for expansion will be limited. Proposed in this IPR is to make the welding program an accredited testing facility through the American Welding Society (AWS). In order to accomplish this task in a timely manner (months instead of years) additional part-time help will be needed. In order to put things into perspective, there are more than 100 items on a five-page checklist that need to be met in order to pass an on-site audit to become accredited (See appendix: M).

Recommendations/Plan:

In order to prepare the welding technology program for such a monumental task, additional staffing will be required. Staffing may come in the way of additional part-time faculty, instructional aides, and clerical support from the office of instruction or possibly work-study students.

Starting in the fall of 2013, a work-study has been utilized to help out with cleanup and general shop operations.

Reevaluate the Welding Technology Program staffing needs at the next scheduled Welding Advisory Committee meeting.

Welding Technology Program
Section Two: Human Resource Planning

B. Professional Development:

Description:

The Lassen College Welding Technology full-time faculty member has a flex contract on file with the Office of Instruction. (See appendix: N)

Evaluation:

To date, I've attended North America's largest metal forming, fabricating, welding and finishing event known as FABTECH in 2012. I've also completed 80 hours of continuing education with Weld-Ed. Forty hours were completed in the summer of 2013 in the area of welding metallurgy and forty completed in the summer of 2014 in the area of Design, assembly and robotic welding. The continuing education described above has been used to meet the flex requirements for 2012-2013 and 2014-2015

Recommendations/Plan:

I will continue attending the Weld-Ed training series, which are offered every summer. Other professional development will come from miscellaneous trips to local welding based industries.

Reevaluate the Welding Technology Program's professional development needs at the next scheduled Welding Advisory Committee meeting.

Welding Technology Program
Section Two: Human Resource Planning

C. Student Outcomes

Description:

Student learning outcomes are completed at the end of each semester for all welding courses.

Evaluation:

Student learning outcome results do not necessitate any changes in human resource planning.

Recommendations/Plan:

None at this time

Welding Technology Program
Section Two: Human Resource Planning

D. Prioritized Recommendations for Implementation by Program Staff

None at this time

Welding Technology Program
Section Three: Facilities Planning

Evaluation:

The welding department has expanded into the adjoining 2000 sq. ft. construction trades building. That expansion has included multiple electrical drops for shop equipment along with an existing air handler system that has been made operational. These were completed just prior to John Mulcahy's retirement. (Previous welding instructor)

Do to the configuration of the space, and lack of roll up doors, a best solution would be to use the space to increase our capacity by adding more welding booths.

Recommendations/Plan:

We have been fortunate enough to add more square footage to the welding program by way of the adjoining construction trades shop. With that in mind, what can't be improved upon is the existing infrastructure, primarily the electrical circuits. There is a finite amount, which is why new welding booths aren't set up to weld only one process. The space and limited number of circuits is too precious for that. Below are my recommendations.

- Evaluate the current number of electrical circuits available to determine how many welding booths can be added.
- Fill the new space with multiple aisles of welding booths (limited by the number of electrical circuits available).
- Create a separate space within the shop where welding certifications are offered.
- Improve existing electrical drops (splitting circuits if possible) and extend them to welding booths.
- Provide necessary ventilation for additional welding booths.

The Welding Technology Advisory Board has endorsed the above recommendations. (See appendix I)

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome
3	Evaluate number of electrical circuits available in construction trades	2015-2016	$250.00	Evaluation purposes to determine items below
3	Construct welding booths	2015-2016	$2500.00	Meet student demand FTE growth
1	Create space for welding certifications w/in shop	2015-2016	$1000.00	AWS accreditation
3	Improve existing electrical drops	2015-2016	$6000.00	Infrastructure improvement
3	Improve ventilation	2015-2016	$25,000.00	Safety

Welding Technology Program
Section Four: Technology Planning

Evaluation:

The welding department currently has the latest smart board technology, which is used for power point and video presentations.

The department also has a computer station that is used to access Accudemia. Accudemia is a web-based program used to track the positive attendance hours of students.

Recommendations/Plan:

With the Purchase of a CNC plasma cutter as outlined in the annual report, (Appendix B) and in section one, C. (student evaluation summary) multiple computer workstations will be needed. These can be acquired from LCC surplus if available.

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome
1	Purchase CNC	Fall 2014	$20,000.00	Increased FTE
1	Computer Workstations	Spring 2015	Surplus	N/A

Appendix:

A

Institutional and Program Student Learning Outcomes

Lassen Community College District Strategic Plan

Vision

- Be the Academic Leader by ensuring quality and student success
- Be the Educational Leader by expanding outreach and student access
- Be a Trusted Steward by providing capable leadership and accountability
- Be the Economic and Workforce Development Leader for the community
- Be the Cultural Leader in the community
- Be the Civic and Social Leader in the community
- Be the Model of a highly efficient self-sustaining rural community college

Mission

Lassen Community College provides outstanding programs for all pursuing higher education goals. The core programs offer a wide range of educational opportunities including transfer degrees and certificates, economic and workforce development, and basic skills instruction. The college serves students, both on campus and in outreach areas in its effort to build intellectual growth, human perspective and economic potential.

Strategic Goals

1. Institutional Effectiveness: Provide the governance, leadership, integrated planning and accountability structures, and processes to effectively support the learning environment, while ensuring responsible stewardship of public trust and resources.
2. Learning Opportunities: Provide an array of rigorous academic programs delivered via a variety of modalities that promote student learning and meet the needs of the local and global community.
3. Resource Management: Manage human, physical, technological and financial resources to sustain fiscal stability and to effectively support the learning environment.
4. Student Success: Provide a college environment that reaches-out-to and supports students, minimizes barriers, and increases opportunity and success through access and retention to enable student attainment of educational goals including completion of degrees and certificates, transfer, job placement and advancement, improvement of basic skills, and self-development through lifelong learning.

College Values

Educational Excellence – We value:

- High quality educational delivery
- Highly qualified instructors
- High quality technology and materials
- Well-equipped classrooms
- Student learning as the focal point of every experience

Student Focus – We value:

- Doing what is best for students, not what is easiest or most efficient
- Learning as a priority over teaching
- Student needs; they are paramount in the learning process

Honesty/ Integrity – We value:

- Establishing trust in relationships
- Dependability
- Transparency

Student Success – We value:

- Students reaching their goals
- Students being prepared for transfer to four-year institutions
- Vocational students being prepared for the job market

Dignity/Respect – We value:

- Civility
- Collegiality
- Diversity
- Active listening and communication
- Agreements that are made and kept

Institutional Student Learning Outcomes

1. Communication - Ability to listen and read with comprehension and the ability to write and speak effectively
2. Critical Thinking - Ability to analyze a situation, identify and research a problem, propose a solution or desired outcome, implement a plan to address the problem, evaluate progress and adjust the plan as appropriate to arrive at the solution or desired outcome
3. Life Long Learning - Ability to engage in independent acquisition of knowledge; ability to access information including use of current technology; ability to use the internet and/or library to access and analyze information for relevance and accuracy; ability to navigate systems
4. Personal/Interpersonal Responsibility - Ability to develop and apply strategies to set realistic goals for personal, educational, career, and community development; ability to apply standards of personal and professional integrity; ability to cooperate with others in a collaborative environment for accomplishment of goals; ability to interact successfully with other cultures

LCC
LASSEN COMMUNITY COLLEGE

LASSEN COMMUNITY COLLEGE
STATUS OF CURRICULUM REVIEWS

WELDING INSTRUCTIONAL PROGRAM REVIEW:
STATUS OF CURRICULUM REVIEW: October 10, 2013

Course	Curriculum Committee Review Completed	Curriculum Committee Review Not Completed
IT 22	02/19/2013	
IT 72	05/21/2013	
WT 20	04/17/2012	
WT 21	04/17/2012	
WT 22	04/17/2012	
WT 23	04/17/2012	
WT 31	Reactivated 02/19/2013	
WT 32	Reactivated 02/19/2013	
WT 36	05/15/2012	
WT 37	05/22/2012	
WT 38	02/19/2013	
WT 39	02/19/2013	
WT 40	00/19/2013	
WT 42	02/19/2013	
WT 43	02/19/2013	
WT 44	02/19/2013	
WT 45	02/19/2013	
WT 49A	03/20/2012	
WT 49	4/5/11	
AS Welding Technology		1/16/07 (SLO)
CA Welding Technology (two-year)		1/16/07 (SLO)
CA Welding Technology (one-year)		1/16/07 (SLO)
Cert of Acc – Welding Technology		1/16/07 (SLO)

Mr. Kory Konkol, Subject Area Faculty Signature Date

Ms. Cheryl Aschenbach, Curriculum/Academic Standards Committee Chair Signature Date

Ms. Susan G. Mouck, Executive Vice President of Academic Services Signature Date

LCC

LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: IT 22
COURSE TITLE: Operations, Maintenance & Safety

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
1, 2		Describe hazard materials awareness and handling.	**Measure:** Assignment, Project, Presentation **Target:** 80% of students will achieve 70% or higher.
1, 2		Describe confined space and lockout/tag out procedures.	**Measure:** Assignment, Project, Presentation **Target:** 80% of students will achieve 70% or higher.
1, 2		Explain chemical alert systems.	**Measure:** Assignment, Project, Presentation **Target:** 80% of students will achieve 70% or higher.
1, 2		Explain elements of material safety data sheets.	**Measure:** Assignment, Project, Presentation **Target:** 80% of students will achieve 70% or higher.

Doc ID#

LCC

LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: IT 72
COURSE TITLE: Facilities Maintenance - Welding

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely perform soldering and brazing joint designs using GMAW to industry standards.	**Measure:** Performance, Assignment, Project **Target:** 80% of students will achieve 70% or higher.
2		Safely perform welding applications to joint designs, which meet or exceed American Welding Society (AWS) standards using GMAW.	**Measure:** Performance, Assignment, Project **Target:** 80% of students will achieve 70% or higher
2		Safely perform soldering and brazing joint designs using GMAW and SMAW to industry standards.	**Measure:** Performance, Assignment, Project **Target:** 80% of students will achieve 70% or higher
2		Safely perform welding applications to joint designs, which meet or exceed American Welding Society (AWS) standards using GMAW and SMAW.	**Measure:** Performance, Assignment, Project **Target:** 80% of students will achieve 70% or higher
2		Safely perform soldering and brazing joint designs using GMAW, SMAW and FCAW to industry standards.	**Measure:** Performance, Assignment, Project **Target:** 80% of students will achieve 70% or higher
2		Safely perform welding applications to joint designs, which meet or exceed American Welding Society (AWS) standards using GMAW, SMAW and FCAW.	**Measure:** Performance, Assignment, Project **Target:** 80% of students will achieve 70% or higher

2		Perform maintenance, repair, and/or fabrication on selected equipment and/or facilities with selected joining processes.	**Measure:** Performance, Assignment, Project **Target:** 80% of students will achieve 70% or higher

LCC

LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 20
COURSE TITLE: Power Plant & Field Pipe Welding 1

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely set-up and perform a minimum of ten straight line cuts, seven inches long on 3/8" steel using oxyacetylene cutting equipment.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Safely setup and perform gouging, cutting, and piercing on 3/8" ferrous metals using carbon arc cutting equipment.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Apply E6011-1/8" and E7018-1/8" electrodes on 3/8" plate and 6" schedule 80 pipe joint designs, using shielded metal arc welding equipment, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete a 3/8" - 1G plate and a 6" schedule 80 - 2G pipe qualification, using shielded metal arc welding, which meets or exceeds the American Welding Society D1.1 Structural Welding Code Standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 21
COURSE TITLE: Power Plant & Field Pipe Welding 2

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Apply E6011-5/32" and E7018-5/32" electrodes, right handed and left handed on 3/8" plate joint designs, using the shielded metal arc welding equipment, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Apply E6011-5/32" and E7018-5/32" electrodes on 3/8" plate joint designs using AC polarity, with the shielded metal arc welding equipment.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Apply ER70S fill rod to six joint designs, using the gas tungsten arc welding process on 16g hot rolled steel.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete three (3) 2G and three (3) 5G pipe joints using the shielded metal arc welding equipment on 6" schedule 80 pipe, which meets or exceeds the American Welding Society D1.1Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete a 1" – 3G and a 1" - 4G American Welding Society qualification using the shielded metal arc welding process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 22
COURSE TITLE: Power Plant & Field Pipe Welding 3

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Apply E7024-5/32" and ER308-16 – 1/8" electrodes to 3/8" plate joint designs, using the shielded metal arc welding equipment.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Apply ER70S to nine joint designs, using the gas tungsten arc welding process, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete six (6) 6G pipe joints, using the shielded metal arc welding equipment on 6" schedule 80 pipe, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Apply the gas metal arc and flux-cored arc welding processes to joint designs, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete gas tungsten arc, gas metal arc, and flux cored arc welding qualifications, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 23
COURSE TITLE: Power Plant & Field Pipe Welding 4

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Complete five (5) 5G and five (5) 2G pipe joints, using the gas tungsten arc and shielded metal arc welding processes on 6" schedule 80 pipe.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Apply ER4043 to aluminum and ER308 to stainless steel joint designs using the gas tungsten arc welding process on 16g metal.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete a 2G and a 5G pipe qualification, using gas tungsten arc and shielded metal arc welding, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 31
COURSE TITLE: GTAW for Gunsmiths

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Students will complete ten of the weld joint designs using the Gas Tungsten Arc Welding process (GTAW) on mild steel.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Students will complete all four of their Gas Tungsten Arc Welding (GTAW) projects	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 32
COURSE TITLE: Advanced GTAW for Gunsmiths

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Students will complete seven of the weld joint designs using the Gas Tungsten Arc Welding process (GTAW) on stainless.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Students will complete ten of the weld joint designs using the Gas Tungsten Arc Welding process (GTAW) on aluminum.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 36
COURSE TITLE: Welding Theory & Practice- Oxyacetylene

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of ten welds for each of four AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16g hot roll steel with RG 45 filler rod.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Perform a name cutout of 3/16"-1/4" steel, with a minimum of four letters (initial letter 2", remaining 1 ½"), using the oxyacetylene cutting (OAC) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Fabricate watertight and airtight joint designs, to welding shop standards, using oxyacetylene welding.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 37
COURSE TITLE: Welding Theory & Practice- Shielded Metal Arc Welding

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform flat stringer and flat overlap welds with a minimum of 10 passes each using ER7018-1/8", and ER6011-1/8" electrodes, which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Safely setup and perform a minimum of 10 passes for each of the two AWS joint designs with ER7018-1/8", and two with ER6011-1/8" electrodes which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete two AWS (American Welding Society) qualifications on steel plate with ER7018, using the SMAW (shielded metal arc welding) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 38
COURSE TITLE: Welding Theory & Practice- Gas Metal Arc Welding

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on 10G steel plate with CO2 shielding and ER70S .035" diameter fill wire.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Design and fabricate two projects using 16G-10G steel, CO2 shielding, ER70S .035" diameter fill wire, and the gas metal arc welding process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete an AWS (American Welding Society) 3F qualification test on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete three AWS (American Welding Society) qualifications on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 39
COURSE TITLE: Welding Theory & Practice- Gas Tungsten Arc Welding

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed the American Welding Society D1.1 Structural Welding Code standards), using gas tungsten arc welding (GTAW) on 16G steel plate with 2% thoriated tungstens and ER 70S fill rod.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Design and fabricate two projects using 16G steel, argon shielding, ER70S fill wire, and the gas tungsten arc welding process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete an AWS (American Welding Society) 3F qualification test on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete two AWS (American Welding Society) qualifications on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete three AWS (American Welding Society) qualifications on steel plate with ER70S, using the GTAW (gas tungsten arc welding) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 40
COURSE TITLE: Oxyacetylene Welding

Indicate, by number, the Institutional Learning Outcome(s) and the General Education Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of ten welds for each of four AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that meet or exceed industry standards.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that pass industry standards for visual and destructive testing.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Perform a minimum of ten 7" manual and track burner cuts on 3/8", ½", and 1" steel that are 90 degree cuts, minimal slag, and no gouging, using oxyacetylene cutting.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Perform a minimum of ten 7" manual cuts on 10G steel that meet or exceed industry standards, using plasma cutting.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 42
COURSE TITLE: Intermediate Shielded Metal Arc Welding

Indicate, by number, the Institutional Learning Outcome(s) and the General Education Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER7018 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher **Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete two limited and one unlimited thickness AWS (American Welding Society) qualifications, using the shielded metal arc welding process.	

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 43
COURSE TITLE: Advanced Shielded Metal Arc Welding

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER7018 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete two limited and two unlimited thickness AWS (American Welding Society) qualifications, using the shielded metal arc welding process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 44
COURSE TITLE: Gas Metal Arc Welding

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of ten welds for each of six AWS (American Welding Society) joint designs, using ER70S .035" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on steel.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Safely setup and perform a minimum of ten welds for each of six AWS (American Welding Society) joint designs, using ER71T electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using flux cored arc welding (FCAW) on steel.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Safely setup and perform a minimum of ten welds for each of six AWS (American Welding Society) joint designs, using ER71T electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using flux cored arc welding (FCAW) on steel.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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LASSEN COMMUNITY COLLEGE

COURSE SUBJECT & NUMBER: WT 45
COURSE TITLE: Gas Tungsten Arc Welding

Indicate, by number, the Institutional Student Learning Outcome(s) and the General Education Student Learning Outcomes(s) each Student Learning Outcome will support. Specifically describe the assessment method(s) used to measure each outcome and the achievement target that will determine successful completion of the outcome.

ISLO	GESLO	SLO	ASSESSMENT MEASURE /TARGET
2		Safely setup and perform a minimum of ten welds for each of fifteen AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using the gas tungsten arc welding process (GTAW) on steel, stainless steel, and aluminum.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Fabricate watertight and airtight joint designs on steel, stainless steel, and aluminum, to welding shop standards, using the gas tungsten arc welding (GTAW) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher
2		Complete a 1F, 2F, 3F, and 4F AWS (American Welding Society) qualifications on steel plate, using the GTAW (gas tungsten arc welding) process.	**Measure:** Performance, Assignment **Target:** 80% of the students will achieve 80% or higher

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Lassen Community College Course Outline

IT 22 Operations, Maintenance and Safety 1.0 Unit

I. Catalog Description

This course integrates personnel safety, equipment protection and safety tagging procedures with operational and maintenance event expeted in a power generation, process or geo-thermal 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.

Recommended Preparation: English 50 and Reading 51 or or equivalent placement through the assessment process.

Transfers to CSU only
17 Hours Lecture
Scheduled: Fall

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 094610

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:
1. Describe hazard materials awareness and handling.
2. Describe confined space and lockout/tag out procedures.
3. Explain chemical alert systems.
4. Explain elements of material safety data sheets.

B. Course Objectives

Upon completion of this course the student will be able to:
1. Identify and define standard elements of facility safety and training programs.
2. Define and implement various safety tagging procedure, including confined spaces.
3. Demonstrate understanding of MSDS, identify HAZ/MAT and specify appropriate Chemical Alert placard designations and symbols.

IV. Course Content

A. Safety and Training Programs
   1. Organizational Structures
   2. Elements of successful safety program
   3. Topics for facility surveys

B. Safety Tagging Procedures
   1. Types of tags and locks
   2. The "Tagging Authority", the paper and the procedure
   3. Tagging boundaries recognition and evaluation
   4. Confined space recognition and evaluation

C. Facility Environment
   1. MSDS access and interruption
   2. HAZMAT: Identification of materials
   3. Safety equipment
   4. Paperwork and procedural requirements

V. Assignments

A. Appropriate Readings

Safety pamphlets, Material Safety Data Sheets (MSDS), OSHA guidelines and industry reprints.

B. Writing Assignments

Preparation of tagging clearances, MSDS evaluations and confined space determinations

C. Expected Outside Assignments

Assignments may include assigned readings, writing/computations assignments, and facility safety surveys.

D. Specific Assignments that Demonstrate Critical Thinking

Identify and analyze specific safety, tagging, MSDS and confined space case studies and prepare a comprehensive solution for each scenario.

VI. Methods of Evaluation

Multiple measures of student performance, including in-class work, out-of-class work, quizzes and a comprehensive final examination.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☒ **Traditional Classroom Delivery** ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Classroom instruction that may include lecture, demonstation, discussion and a field trip.

VIII. Representative Texts and Supplies

Industry technical data, reprints and material safety data sheets.

IX. Discipline/s Assignment

Industrial Technology, Welding

X. Course Status

Current Status: Active
Original Approval Date: 4/17/1990
Revised By: John Mulcahy
Curriculum/Academic Standards Committee Revision Date: 8/30/2011

Lassen Community College Course Outline

IT 72 Facilities Maintenance - Welding 2.0 Units

I. Catalog Description

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. This course may be taken for a total of three enrollments.

Does Not Transfer to UC/CSU
102 Hours Lab
Scheduled: Spring

II. Coding Information

Repeatability: Repeatable, Take 3 Times
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 094500

III. Course Objectives

Course Student Learning Outcomes

Upon completion of this course the student will be able to:

First Enrollment with maximum supervision

1. Safely perform soldering and brazing joint designs using GMAW (Gas Metal Arc Welding) to industry standards.
2. Safely perform welding applications to joint designs which meet or exceeds American Welding Society (AWS) standards using GMAW.

Second Enrollment with intermittent supervision

1. Safely perform soldering and brazing joint designs using GMAW and SMAW (Shielded Metal Arc Welding) to industry standards.
2. Safely perform welding applications to joint designs which meet or exceeds American Welding Society (AWS) standards using GMAW and SMAW.

Third Enrollment with minimal supervision

1. Safely perform soldering and brazing joint designs using GMAW, SMAW and FCAW (Flux Cored Arc Welding) to industry standards.
2. Safely perform welding applications to joint designs which meet or exceeds American Welding Society (AWS) standards using GMAW, SMAW and FCAW.
3. Perform maintenance, repair, and/or fabrication on selected equipment and/or facilities with selected joining processes.

B. Course Objectives

Upon completion of this course the student will be able to:

First Enrollment with maximum supervision

1. Safely setup and assemble with soldering 10 lap joints, which meet industry standards.

2. Safely setup oxyacetylene equipment and perform 10 brazing lap joints on A36 steel that meet industry standards.
3. Safely setup oxyacetylene equipment and perform 10 brazing 2F joints on A36 steel that meet industry standards.
4. Safely setup GMAW equipment and successfully complete the AWS certification in the vertical and overhead positions which meet or exceed the American Welding Society D1.1 Structural Welding Code standards.
5. Safely setup and assemble a water tight joint design, using soldering on copper tubing, which can withstand house water pressure for a minimum of 5 minutes.
6. Safely setup and assemble a water tight joint design with PVC which can withstand house water pressure for a minimum of 5 minutes.
7. Safely setup and perform maintenance, repair, and/or fabrication on selected equipment and/or facilities utilizing the GMAW and oxyacetylene equipment.

Second Enrollment with intermittent supervision

1. Safely setup and assemble with soldering 10 lap joints which meet industry standards.
2. Safely setup oxyacetylene equipment and perform 10 brazing lap joints on A36 steel that meet industry standards.
3. Safely setup oxyacetylene equipment and perform 10 brazing 2F joints on A36 steel that meet industry standards.
4. Safely setup SMAW equipment and successfully complete the AWS certification in the vertical and overhead positions which meet or exceed the American Welding Society D1.1 Structural Welding Code standards.
5. Safely setup and assemble a water tight joint design, using soldering on copper tubing, which can withstand house water pressure for a minimum of 5 minutes.
6. Safely setup and assemble a water tight joint design with PVC which can withstand house water pressure for a minimum of 5 minutes.
7. Safely setup and perform maintenance, repair, and/or fabrication on selected equipment and/or facilities utilizing the GMAW, SMAW, and oxyacetylene equipment.

Third Enrollment with minimal supervision

1. Safely setup and assemble with soldering 10 lap joints which meet industry standards.
2. Safely setup oxyacetylene equipment and perform 10 brazing lap joints on A36 steel that meet industry standards.
3. Safely setup oxyacetylene equipment and perform 10 brazing 2F joints on A36 steel that meet industry standards.
4. Safely setup FCAW equipment and successfully complete the AWS certification in the vertical and overhead positions which meet or exceed the American Welding Society D1.1 Structural Welding Code standards.
5. Safely setup and assemble a water tight joint design, using soldering on copper tubing, which can withstand house water pressure for a minimum of 5 minutes.
6. Safely setup and assemble a water-tight joint design with PVC which can withstand house water pressure for a minimum of 5 minutes.
7. Safely setup and perform maintenance, repair, and/or fabrication on selected equipment and/or facilities utilizing the GMAW, SMAW, FCAW and oxyacetylene equipment.

IV. Course Content

A. Safety
   1. Safely setup and apply soldering utilizing propane heat.
   2. Safely setup and apply brazing utilizing oxyacetylene.
   3. Safely setup GMAW, SMAW, FCAW and apply to specified AWS joints.

B. Basic Maintnance Functions
   1. Assemble a water tight joint design, using soldering, on copper tubing.
   2. Complete the AWS welding certification in vertical and overhead positions which meet or exceed the American Welding Society D1.1 Structural Welding Code Standards.

C. Basic Repair Functions
   1. Use GMAW to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.
   2. Use SMAW to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.
   3. Use FCAW to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.
   4. Use oxyacetylene to perform maintenance, repair, and/or fabrication on selected equipment and/or facilities.

V. Assignments

A. Appropriate Readings

Manufacturer specifications and diagrams [data sheets, parts lists, and procedures]. AWS D1.1 Structural Welding Code.

B. Writing Assignments

None required for a laboratory only class; however, some calculations and sketch work for AWS certifications, maintenance and repair functions.

C. Expected Outside Assignments

Reading of manufacturer's specifications and preparation for maintencance, and repair functions. Reading of AWS D1.1 Structural Welding Code.

D. Specific Assignments that Demonstrate Critical Thinking

The student will identify, analyze and synthesize maintenance functions in the laboratory projects [student performance objectives], AWS welding certifications, and lab quizzes.

VI. Methods of Evaluation

Each student will be given a course syllabus which will specify student performance objectives and grading policy. Students will be evaluated on completion of student performance objectives, class participation and quizzes.

In addition to the above measures of performance the student will also be evaluated on individual skill level in conjunction with multiple enrollments:

First Enrollment

With continuous supervision, the student must be able to follow verbal and/or written instructions. Student will demonstrate this ability by completing specified projects, fabrications and/or repairs, and AWS certifications (using GMAW) that meet or exceed industry standards.

Second Enrollment
With intermittent supervision, the student must be able to follow verbal and/or written instructions. Student will demonstrate this ability by completing specified projects, fabrications and/or repairs, and AWS certifications (using GMAW and/or SMAW) that meet or exceed industry standards.

Third Enrollment
With minimal supervision, the student must be able to work independently after receiving verbal and/or written instructions. Student will demonstrate this ability by completing specified projects, fabrications and/or repairs, and AWS certifications (using GMAW, SMAW and/or FCAW) that meet or exceed industry standards.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☒ **Traditional Classroom Delivery** ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Laboratory and Demonstration

VIII. Representative Texts and Supplies

Supplies
A list of required and recommended supplies will be included with the course syllabus.

IX. Discipline/s Assignment

Industrial Technology, Welding

X. Course Status

Current Status: Active
Original Approval Date: 2/5/1996
Revised By: John Mulcahy
Curriculum/Academic Standards Committee Revision Date: 12/09/2008

Lassen Community College Course Outline

WT 20 Power Plant & Field Pipe Welding I — 3.0 Units

I. Catalog Description

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.)

Recommended Preparation: English 50 and Reading 51 or equivalent placement through the assessment process.

Transfers to CSU only
17 Hours Lecture, 102 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Certification Requirements
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Safely set-up and perform a minimum of ten straight line cuts, seven inches long on 3/8" steel using oxyacetylene cutting equipment.
2. Safely setup and perform gouging, cutting, and piercing on 3/8" ferrous metals using carbon arc cutting equipment.
3. Apply E6011-1/8" and E7018-1/8" electrodes on 3/8" plate and 6" schedule 80 pipe joint designs, using shielded metal arc welding equipment, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.
4. Complete a 3/8" - 1G plate and a 6" schedule 80 - 2G pipe certification, using shielded metal arc welding, which meets or exceeds the American Welding Society D1.1 Structural Welding Code Standards.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe handling practices and use of: oxyacetylene equipment, air carbon arc cutting equipment and shielded metal arc welding equipment.
2. Demonstrate manipulative skills utilizing the shielded metal arc process, on specified joint designs, which meet recognized industry standards.
3. Set-up and operate oxy-acetylene and carbon arc cutting equipment.
4. Demonstrate manipulative skills to weld pipe with the shielded metal arc welding process in the horizontal rolled (1G) position.

5. Set-up and complete AWS certifications on plate and pipe.

IV. Course Content

A. Health & Safety Precautions
   1. Safe working conditions
   2. Cylinders: Precautions and safe practices
   2. Shielded metal arc equipment

B. Ocy-acetylene Cutting Torches, Equipment and Accessories
   1. Cutting torches
   2. Cutting tips
   3. Oxy-fuel cutting procedures

C. Air Carbon Arc Cutting
   1. Air carbon arc cutting equiping and setup
   2. Air carbon arc cutting procedures

D. Shielded Metal Arc Welding E6011 - 1/8" and E7018 - 1/8"
   Current settings

V. Assignments

A. Appropriate Readings

Standard college level text:"Welding Principles & Applications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of course content by demonstrating application of specific welding processes to recognized joint designs which meet industry standards. Mixed format exams will be administered throughout the course

C. Expected Outside Assignments

May include:

1. Reading and answering questions at end of chapters as assigned by the instructor
2. Pertinent supplementary literature
3. Field trips to construction sites
4. Take-home essays

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of welding concepts and practices by applying technical information to multiple manipulative performance objectives which meet critical industry specifications.

VI. Methods of Evaluation

Methods for determining students grades will be accomplished by the following:

1. Performance on mixed format exams
2. Completion of required manipulative performance objectives
3. Participation in classroom learning activities

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Lecture/Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles & Applications", Jeffus, Larry, Delmar, Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)
Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: John Mulcahy
Latest Curriculum/Academic Standards Committee Revision Date: 04/17/2012

Lassen Community College Course Outline

WT-21 Power Plant & Field Pipe Welding II — 3.0 Units

I. Catalog Description

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-qualification 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.)

Recommended Preparation: English 50 and Reading 51 or equivalent placement through the assessment process.

Transfers to CSU only
17 Hours Lecture, 102 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Certification Requirements
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Apply E6011-5/32" and E7018-5/32" electrodes, right handed and left handed on 3/8" place joint designs, using the shilded metal arc welding equipment, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.
2. Apply E6011-5/32" and E7018-5/32" electrodes on 3/8" plate joint designs using AC polarity, with the shilded metal arc welding equipment.
3. Apply ER70S fill rod to six joint designs, using the gas tungsten arc welding process on 16g hot rolled steel.
4. Complete three (3) 2G and three (3) 5G pipe joints using the shielded metal arc welding equipment on 6" schedule 80 pipe, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.
5. Complete a 1"-3G and a 1"-4G American Welding Society certification using the shielded metal arc welding process.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe preparation and setup of pipe joints in the 2G and 5G positions.
2. Demonstrate the manipulative skills needed to make pipe welds in the 2G and 5G positions using the shieded metal arc welding process.
3. Demonstrate the manipulative skills needed to make gas tungsten arc welds.

4. Demonstrate the manipulative skills needed to set up and complete AWS certifications in the 3G and 4G positions.

IV. Course Content

A. Safety Precautions
   1. Personal protection
   2. Air contamination
   3. Electrical shock
   4. Radiation hazards

B. Shielded Metal Arc Welding - E6011 - 5/32" and E7018 - 5/32"
   1. Current settings
   2. Arc length
   3. Electrode angle
   4. Travel speed
   5. Stringer beads
   6. Padded plate
   7. T-plate horizontal - 2F
   8. T-plate vertical- 3F
   9. T-plate overhead - 4F
   10. T-plate horizontal

C. Pipe Joint Preparations
   1. Beveling
   2. Landings
   3. Fitup
   4. Pipe joint positions - 2G and 5G

D. Vertical Fixed Position (2G) and Horizontal Fixed Position (5G)
   1. Tack welds
   2. Electrode angles
   3. Electrode motions
   4. Root pass
   5. Fill passes
   6. Cover passes

E. Gas Tungsten Arc Welding
   1. Machine settings
   2. Electrode selection
   3. Electrode angles
   4. Selected ferrous joint designs

F. AWS Certifications
   1. 3G plate - 1"
   2. 4G plate - 1"

V. Assignments

A. Appropriate Readings

Standard college level text,"Welding Principles & Applications," and/or trade manuals. Additional information sources will include product and use use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of urse content by demonstrating application of specific welding processes to recognized joint designs which meet industry standards. Mixed format exams will also be administered throughout the course.

C. Expected Outside Assignments

May include:

1. Reading and answering questions at end of chapters as assigned by the instructor
2. Pertinent supplementary literature
3. Field trips to construction sites
4. Take-home essays

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of welding concepts and practices by applying technical information to multiple manipulative performance objectives which meet critical industry specifications.

VI. Methods of Evaluation

Methods for determining students grades will be accomplished by the following:

1. Performance on mixed format exams
2. Completion of required manipulative performance objectives
3. Participation in classroom learning activities

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Lecture/Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar, Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)

Gauntlet leather welding golves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: John Mulcahy
Latest Curriculum/Academic Standards Committee Revision Date: 04/17/2012

Lassen Community College Course Outline

WT 22 Power Plant & Field Pipe Welding III — 3.0 Units

I. Catalog Description

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) qualification in GTAW, GMAW, 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.)

Recommended Preparation: English 50 and Reading 51 or equivalent placement through the assessment process.

Transfers to CSU only
17 Hours Lecture, 102 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Certification Requirements
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Apply E7024-5/32" and ER308-16 – 1/8" electrodes to 3/8" plate joint designs, using the shielded metal arc welding equipment.
2. Apply ER70S to nine joint designs, using the gas tungsten arc welding process, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.
3. 3. Complete six (6) 6G pipe joints, using the shielded metal arc welding equipment on 6" schedule 80 pipe, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.
4. Apply the gas metal arc and flux-cored arc welding processes to joint designs which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.
5. Complete gas tungsten arc, gas metal arc, and flux cored arc welding certifications which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe preparation and setup of pipe joints in the 6G position.
2. Demonstrate the manipulative skills needed to make successful pipe welds in the 6G position.
3. Demonstrate the manipulative skills needed to make gas tungsten arc welds on specified recognized joint designs which comply with industry standards
4. Demonstrate the manipulative skills needed to make shielded metal arc welds using stainless steel electrodes and "fast fill" electrodes.
5. Evaluate and apply welding symbols to blueprints.
6. Demonstrate manipulative skills needed to make gas metal arc and flux core arc welds on specified weld joint designs which comply with industry standards.
7. Demonstrate the manipulative skills needed to set up and complete AWS certifications in GTAW, GMAW and FCAW.

IV. Course Content

A. Safety Precautions
   1. Electrical shock
   2. Radiation hazards
   3. Compressed gases
   4. Air contamination

B. Shielded Metal Arc Welding - E7024 - 5/32"
   1. Current settings
   2. Arc length
   3. Electrode angle
   4. Travel speed
   5. Stringer beads
   6. Padded plate
   7. T-plate horizontal

C. Shielded Metal Arc Welding - E R 308
   1. Current settings
   2. Arc length
   3. Electrode angle
   4. Travel speed
   5. Stringer beads
   6. Padded plate
   7. T-plate horizontal-2F
   8. T-plate vertical - 3F

D. Pipe Joint Preparations - 6G
   1. Beveling
   2. Landings
   3. Fit-up

E. Inclined Angle Position (6G)
   1. Tack welds
   2. Electrode angles
   3. Electrode motion
   4. Root pass
   5. Fill pass
   6. Cover pass

F. Gas Tungsten Arc Welding
   1. Machine settings

2. Flat stringer - no filler
3. Flat stringer - with filler
4. Flat - closed butt
5. T-plate horizontal-2F
6. T-plate vertical-3F

G. Gas Metal Arc Welding
1. Machine settings
2. Flat stringers
3. Overlaps
4. T-plate horizontal (2f)
5. T-plate 3F and 4F

H. Flux core arc welding
1. Machine settings
2. Flat stringers
3. Overlaps
4. T-plate 2F, 3F, 4F

I. AWS Certifications
1. GTAW
   a. 3F
   b. 4F
2. GMAW
   a. 3F
   b. 4F
3. FCAW
   a. 3G
   b. 4G

V. Assignments

A. Appropriate Readings

Standard college level text, "Welding Principles & Applications" and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of course content by demonstrating application of specific welding processes to recognized joint designs which meet industry standards. Mixed format exams will also be administered throughout the course.

C. Expected Outside Assignments

May include:

1. Reading and answering questions at the end of chapters as assigned by the instructor.
2. Pertinent supplementary literature
3. Field trips to construction sites
4. Take-home essays

D. Specific Assignments that Demonstrate Ccritical Thinking

Students will be required to demonstrate understanding of welding concepts and practices by applying technical information to multiple manipulative performance objectives which meet critical industry specifications.

VI. Methods of Evaluation

Methods for determining students grades will be accomplished by the

following:

1. Performance on mixed format exams
2. Completion of required manipulative performance objectives
3. Participation in classroom learning activities

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Lecture/Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies:
Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: John Mulcahy
Latest Curriculum/Academic Standards Committee Revision Date: 04/17/2012

Lassen Community College Course Outline

WT 23 Power Plant & Field Pipe Welding IV — 3.0 Units

I. Catalog Description

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 qualifications will be prepared and completed in the 5G and 6G positions. Repeatable as required for qualifications by the American Welding Society D1.1 Section 4.1.3 (Instructor Authorization Required for Course Repetition.)

Recommended Preparation: English 50 and Reading 51 or equivalent placement through the assessment process

Transfers to CSU only
17 Hours Lecture, 102 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Certification Requirements
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Complete five (5) 5G and five (5) 2G pipe joints, using the gas tungsten arc and shielded metal arc welding processes on 6" schedule 80 pipe.
2. Apply ER4043 to aluminum and ER308 to stainless steel joint designs using the gas tungsten arc welding process on 16g metal.
3. Complete a 2G and a 5G pipe certification, using gas tungsten arc and shielded metal arc welding, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate the manipulative skills needed to make successful pipe welds utilizing the gas tungsten arc welding and shielded metal arc welding processes that will comply with industry standards.
2. Demonstrate the manipulative skills needed to make successful welds on aluminum and stainless steel with the gas tungsten arc welding process.
3. Prepare and complete AWS pipe certifications in the 5G and 6G positions.

IV. Course Content

A. Safety Precautions
    1. Electrical shock

2. Radiation hazards
3. Compressed gases
4. Air contamination

B. Vertical Fixed Position (2G)
1. Tack welds
2. Torch position
3. Filler rod application
4. Root pass - GTAW
5. Fill and cover passes - E7018

C. Horizontal Fixed Position (5G)
1. Tack welds
2. Torch position
3. Tiller rod application
4. Root pass - GTAW
5. Fill and cover passes - E7018

D. Gas Tungsten Arc Welding - Aluminum
1. Torch set-up
2. Machine settings
3. Flowmeter settings
4. Striking an arc
5. Flat stringer - no filler
6. Flat stringer - filler
7. T-plate horizontal - 2F
8. T-plate vertical- 3F

E. Gas Tungsten Arc Welding - Stainless Steel
1. Torch set-up
2. Machine settings
3. Flowmeter settings
4. Striking an arc
5. Flat stringer - no filler
6. Flat stringer - filler
7. T-plate horizontal - 2F
8. T-plate vertical - 3F

F. 5G Pipe AWS Certification

G. 6G Pipe AWS Certification

V. Assignments

A. Appropriate Readings

Text: "Welding Principles and Applications," and/or trade manuals will be primary sources of course readings. Additonal information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skill & understanding of course content by demonstrating application of specific welding processes to recognized joint designs which meet industry standards. Mixed format exams will also be administered throughout the course.

C. Expected Outside Assignments

May include:

1. Reading and answering questions at end of chapters as assigned by the instructor
2. Pertinent supplementary literature

3. Field trips to construction sites
4. Take-home essays

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of welding concepts and practices by applying technical information to multiple manipulative performance objectives which meet critical industry specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:

1. Performance on mixed format exams
2. Completion of required manipulative performance objectives
3. Participation in classroom learning activities

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Lecture/Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)

Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: John Mulcahy
Latest Curriculum/Academic Standards Committee Revision Date: 04/17/2012

Lassen Community College Course Outline

WT-31 - GTAW For Gunsmiths — 3.0 Units

I. Catalog Description

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.

Transfers to CSU only
17 Hours Lecture, 102 Hours Lab

Scheduled:

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded or Credit/No Credit
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

1. Students will complete ten of the weld joint designs using the Gas Tungsten Arc Welding process (GTAW) on mild steel.
2. Students will complete all four of their Gas Tungsten Arc Welding (GTAW) projects.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe handling and use of gas tungsten arc welding (GTAW) equipment.
2. Demonstrate the manipulative skills necessary to weld selected joint designs with the gas tungsten arc welding (GTAW) process which meet critical industry standards.
3. Demonstrate the manipulative skills necessary to fabricate and/or repair selected projects using the gas tungsten arc welding equipment (GTAW).
4. Demonstrate the manipulative skills necessary to perform soft soldering on selected joint designs.
5. Demonstrate safe handling and use of oxyacetylene equipment.
6. Demonstrate the manipulative skills necessary to perform brazing and braze welding.

IV. Course Content

A. Safety Precautions
   1. Electrical shock
   2. Radiation hazards
   3. Compressed gases
   4. Air contamination
   5. Emergency shop procedures
   6. Oxyacetylene equipment
   7. Oxygen and acetylene cylinders

8. Oxygen and acetylene regulators
9. Oxyacetylene welding torches and tips
10. Oxyacetylene flame types and adjustments

B. GTAW Torch Set-up
1. Torch set-up
2. Collet bodies
3. Collet
4. Ceramic cups
5. Tails/caps
6. Tungsten electrodes

C. GTAW Power Source Settings
1. Polarity settings
2. Amperage control
3. High frequency adjustments
4. High frequency adjustments

D. GTAW Flowmeter
1. Shielding gas selection
2. GTAW flowmeter components
3. Flowmeter settings

E. Establishing an Arc
1. Assembling the GTAW torch
2. Tungsten electrode extension
3. Torch angle and distance from workpiece

F. Weld Bead Parameters
1. Bead width
2. Penetration
3. Ripple appearance
4. Travel speed

G. Selected Joint Designs - Mild Steel
1. Flat - no filler
2. Flat - filler
3. Closed butt - flat and vertical
4. T-joint - horizontal
5. T-joint - vertical
6. Lap joint - bend test
7. Edge joints - single and double
8. Corner joint (Outside) - bend test
9. Water tight joint
10. Air tight joint

H. GTAW Projects
1. Barrel spinner
2. Action wrench handles
3. Firing pin holes
4. Bolt handles

I. Soft Soldering
1. Types of solder
2. Soldering devices
3. Soldering techniques
4. Lap joint bend test
5. Soft solder project

J. Brazing and Braze Welding Mild Steel and Cast Iron
   1. Lap joint - mild steel
   2. T-joint - mild steel
   3. Cast iron

V. Assignments

A. Appropriate readings
   Text:"Welding Principles and Applications," and trade manuals will be primary reference sources for course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.
B. Writing assignments or skills demonstration
   Students will apply technical skills and understanding of course content by demonstrating application of the gas tungsten arc welding process on specific joint designs which meet industry standards.
C. Out of class assignments
   May include:
   1. Pertinent supplementary literature
   2. Design and fabrication of gunsmithing equipment using the gas tungsten arc welding process
D. Assignments that demonstrate critical thinking
   Students will be required to demonstrate understanding of gas tungsten arc welding (GTAW) concepts and practices by applying the technical information to multiple manipulative performance objectives and projects which meet critical industry and shop specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
A. Completion of required manipulative performance objectives and projects.
B. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☐ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

Larry Jeffus, *Welding Principles and Applications*, Delmar Publishers, 2008, Sixth Edition, ISBN-13:978-1-4180-5275-1, and/or trade manuals.
SUPPLIES: (required)
   A. Gauntlet leather welding gloves
   B. Safety glasses
   C. Leather "logging type" boots
   D. Cuffless, heavy cotton workpants, in good repair

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 02/19/2013

Lassen Community College Course Outline

WT-32 Advanced GTAW for Gunsmiths 3.0 Units

I. Catalog Description

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.

Prerequisite(s): None
Corequisite(s): None
Recommended Preparation: Concurrent enrollment or credit for WT 31 or instructor approved work experience/classes.

Transfers to CSU only
17 Hours Lecture, 102 Hours Lab

Scheduled:

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded or Credit/No Credit
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

1. Students will complete seven of the weld joint designs using the Gas Tungsten Arc Welding process (GTAW) on stainless steel.
2. Students will complete ten of the weld joint designs using the Gas Tungsten Arc Welding process (GTAW) on aluminum.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe handling and use of the gas tungsten arc welding (GTAW) equipment when applied to gunparts, related equipment and projects.
2. Demonstrate the manipulative skills necessary to weld selected joint designs with the gas tungsten arc welding (GTAW) process which meet industry standards.
3. Identify the base material type(s) for applying the gas tungsten arc welding process to gunparts, related equipment and projects.
4. Select the appropriate tungsten electrode type and diameter for application to gunparts, related equipment and projects.
5. Select and apply the appropriate heat range, high frequency, polarity, shielding gas flow rate, filler rod type and diameter to gunparts, related equipment and projects.
6. Demonstrate appropriate methods for preparing base metal materials.
7. Demonstrate correct use of fixturing devices, heat fences, tacking and welding procedures to gunparts, related equipment, and projects.

8. Demonstrate the manipulative skills necessary to perform silver solder on selected joint designs.

IV. Course Content

A. Safety Precautions
   1. Electrical shock
   2. Radiation hazards
   3. Compressed gases
   4. Air contamination
   5. Emergency shop procedures

B. Base Metal Identification
   1. Low, medium and high carbon steel
   2. Stainless steels
   3. Aluminum
   4. Aluminum magnesium alloys
   5. Brass
   6. Cast steels vs. cast irons

C. Tungsten Electrodes - Types and Diameter Selection
   1. 2% thoriated - red coded
   2. 1% thoriated - yellow coded
   3. Pure - green coded
   4. Zirconiated - brown coded
   5. Diameters

D. Filler Rod Selection
   1. Low, medium and high carbon steel
   2. Stainless steels
   3. Aluminum
   4. Aluminum magnesium alloys
   5. Silicon bronze

E. Base Metal Preparation Techniques
   1. Mechanical
   2. Chemical

F. Fixturing Devices
   1. "Helping hands"
   2. Magnets
   3. Vise and vise grips
   4. Aluminum and copper plate

G. Heat Fences
   1. Heat stop
   2. Chill plates
   3. Sand and water quench

H. Selected Joint Designs - Stainless Steel
   1. Flat - no filler
   2. Flat - filler
   3. Closed butt - flat and vertical
   4. T-joint - horizontal
   5. T-joint - vertical
   6. Corner joint (Outside)
   7. Edge joints - single and double

I. Selected Joint Designs - Aluminum
   1. Flat - no filler
   2. Flat - filler
   3. Closed butt - flat and vertical
   4. T-joint - horizontal
   5. T-joint - vertical
   6. Corner joint (Outside)
   7. Edge joints - single and double

J. GTAW Projects
   1. .45 barrel hoods
   2. Screw heads

K. Silver Soldering
   1. Types of solder
   2. Soldering devices
   3. Soldering techniques
   4. Lap joint bend test
   5. Silver solder project

V. Assignments

A. Appropriate readings

College Text:"Welding Principles & Applications," and/or trade manuals will be primary reference sources for course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing assignments or skills demonstration

Students will apply technical skills and understanding of course content by demonstrating application of the gas tungsten arc welding (GTAW) process on selected gunparts and projects which meet industry and shop standards.

C. Out of class assignments

May include:
1. Pertinent supplementary literature
2. Design and fabrication of gunsmithing equipment using the gas tungsten arc welding process using the gas tungsten arc welding (GTAW) process.

D. Assignments that demonstrate critical thinking

Students will be required to demonstrate understanding of gas tungsten arc welding (GTAW) concepts and practices by applying the technical information to a required number of gunparts, related equipment and projects. Performance levels will meet or exceed industry and/or shop specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
A. Completion of required number of gunparts, related equipment and projects
B. Participation in classroom learning activities

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☐ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

Larry Jeffus, *Welding Principles & Applications*, Jeffus, Larry. Delmar Publishers, 2008, 6th ed. ISBN-13:978-1-4180-5275-1, and/or trade manuals.

SUPPLIES: (required)

A. Gauntlet leather welding gloves
B. Safety glasses
C. Leather "logging type" boots
D. Cuffless, heavy cotton workpants, in good repair

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 02/19/2013

Lassen Community College Course Outline

WT 36 Welding Theory & Practice - Oxyacetylene 1.0 - 3.0 Units

I. Catalog Description

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.

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeataility: 3 Enrollments, not to exceed 3.0 units
Open Entry/Open Exit: Open Entry/Exit
Grading Option: Graded or Credit/No Credit
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives/Outcomes

Upon completion of this course the student will be able to:

One Unit:

1. Safely setup and perform a minimum of ten welds for each of six AWS joint designs, using OAW, on 16g hot roll steel with RG 45 filler rod.
2. Perform a name cutout of 3/16"-1/4" steel, with a minimum of four letters (initial letter 2", remaining 1 ½"), using the OAC process.

Two Units:

1. Safely setup and perform a minimum of ten welds for each of nine AWS joint designs, using OAW, on 16g hot roll steel with RG 45 filler rod.

Three Units:

1. Safely setup and perform a minimum of ten welds for each of twelve AWS joint designs, using OAW, on 16g hot roll steel with RG 45 filler rod.
2. Fabricate watertight and airtight joint designs, to welding shop standards, using OAW.

IV. Course Content

One Unit:

A. Safety precautions
   1. Working conditions
   2. Personal protection
   3. Air contamination
   4. Compressed gases
B. Project procedures
   1. Identify recognized joint designs
   2. Tacking procedures
C. Equipment setup

1. Oxygen and acetylene pressure requirements
2. Cutting and welding tip requirements
3. Filler rod selection

D. Welding/Cutting preparation procedure
1. Open butt - flat
2. Open butt - vertical
3. T-joint 2F (horizontal)
4. T-joint 3F (vertical)
5. Lap joint - flat
6. Lap joint – vertical

Two Units: (in addition to one unit requirement)

A. Welding/cutting procedure
1. Open butt-overhead
2. T-joint 4F - overhead
3. Lap joint – overhead
4. Name cut-out

Three Units: (in addition to one and two unit requirements)

A. Welding/cutting procedures
1. Edge joint – Double - Flat
2. Edge joint – Single - Flat
3. Outside corner - flat
4. Water-tight project
5. Air tight project

V. Assignments

A. Appropriate Readings

College text:"Welding Principles and Applications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of course content by demonstrating application of the OAW and OAC processes to selected projects which meet shop standards.

C. Expected Outside Assignments

None

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of OAWand OAC processes to selected projects which meet shop standards. An example of the critical thinking and demonstration of welding techniques would be the following:

Given: 1" x 4" x 16 gauge low-carbon steel plates, oxyacetylene tanks, wleding tips, tip cleaner, RG45 fill rod, oxyacetylene goggles, leather gloves and jacket, welding table.

Performance: The student will tack weld two pieces of 16 gauge steel into a T-joint design and set the joint into the 2F position. The student will weld the T-joint, using RG45 fill rod the length of the 4" joint design.

Standard: The student will complete 10 T-joints in the 2F position. All welds will be inspected for equal legs, flat face, length, height, and ripple appearance. A

destructive bend test will be administered to all T-joints. One hundred percent of the T-joints must pass the bend test.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:

1. Completion of required selected projects.
2. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies:

Gauntlet leather welding gloves
Safety glasses
Leather "logging" type boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 3/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 05/22/2012

Lassen Community College Course Outline

WT 37 Welding Theory & Practice – Shielded Metal Arc Welding

1.0 - 3.0 Units

I. Catalog Description

This is an elective welding course where the student will apply the shielded metal are welding (SMAW) process to selected projects. This course has been approved for open entry/open exit. This course may be taken for three enrollments not to exceed three units, or as required to maintain welding qualifications per American Welding Society (AWS) D1.1 Section 4.1.3.

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Three Enrollments not to exceed three units, or to maintain AWS qualification requirements
Open Entry/Open Exit: Open Entry/Exit
Grading Option: Graded or Credit/No Credit
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives/Outcomes

Upon completion of this course the student will be able to:

One Unit:

1. Safely setup and perform flat stringer and flat overlap welds with a minimum of 10 passes each using ER7018-1/8", and ER6011-1/8" electrodes, which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.
2. Safely setup and perform a minimum of 10 passes for each of the two AWS joint designs with ER7018-1/8", and two with ER6011-1/8" electrodes which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.

Two Units:

1. Safely setup and perform flat stringer and flat overlap welds with a minimum of 10 passes each using ER7018-1/8", and ER6011-1/8" electrodes, which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.
2. Safely setup and perform a minimum of 10 passes for each of the three AWS joint designs with ER7018-1/8", and three with ER6011-1/8" electrodes which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.
3. Complete two AWS qualifications on steel plate with ER7018, using the SMAW process.

Three Units:

1. Safely setup and perform flat stringer and flat overlap welds with a minimum of 10 passes each using ER7018-1/8", and ER6011-1/8" electrodes, which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.
2. Safely setup and perform a minimum of 10 passes for each of three AWS joint designs with ER7018-5/32", three with ER7018-1/8", three with ER6011-5/32" and three with ER6011-1/8" electrodes which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.
3. Complete three AWS qualifications on steel plate with ER7018, using the SWAW process.

IV. Course Content

One Unit:

A. Safety precautions
   1. Safe working conditions
   2. SMAW equipment
   3. Precautions for welders and welding operators
   4. Personal protection
   5. Fire prevention
   6. Ventilation and fume hazards
   7. Noise protection

B. Project procedures
   1. Construction steps
   2. Identify recognized joint designs
   3. Tacking procedures
   4. Fixturing

C. Equipment setup
   1. Amperage determination
   2. Filler rod selection
   3. Polarity selection

D. Welding preparation procedure
   1. Flat stringers - overlaps w/stop & starts - E6XXX-1/8"
   2. Horizontal T-joints-2F- E6XXX-1/8"
   3. Vertical T-joints-3F- E6XXX-1/8"
   4. Flat stringers - overlaps w/stop & starts - E7XXX-1/8"
   5. Horizontal T-joint - 2F - E7XXX-1/8"
   6. Vertical T-joint 3F - E7XXX-1/8"

Two Units: (in addition to one unit requirement)

A. Welding Procedure
   1. Overhead T-joint 4F - E6XXX-1/8"
   2. Overhead T-joint 4F - E7XXX-1/8"

B. AWS qualification
   1. Set up
   2. Procedure - 3/8" - 1G, 3G

Three Units: (in addition to one and two unit requirements)

A. Welding procedure

1. Flat stringers-overlaps w/stop & starts-E6XXX-5/32"
2. Horizontal T-joints - 2F – E6XXX-5/32"
3. Vertical T-joints - 3F- E6XXX-5/32"
4. Overhead T-joints- 4F- E6XXX-5/32"
5. Flat stringers-overlaps w/stop & starts-E7XXX-5/32"
6. Horizontal T-joints - 2F - E7XXX-5/32"
7. Vertical T-joints - 3F- E7XXX-5/32"
8. Overhead T-joints - 4F- E7XXX-5/32"

B. AWS qualification
1. Set up
2. Procedure - 3/8" - 4G

V. Assignments

A. Appropriate Readings

College text,"Welding Principles & Applications", and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skill and understanding of course content by demonstrating application of the SMAW process to selected projects which meet accepted industry standards.

C. Expected Outside Assignments

None

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of SMAW practices by applying technical information to selected projects which meet accepted industry standards. An example of the critical thinking and demonstration of welding techniques would be the following:

Given: Two 4" x 7" x 3/8" low-carbon steel plate, 1/8" E6011 SMAW electrodes, chipping hammer, wire brush, SMAW helmet, leather welding jacket, leather welding gloves, SMAW power source, welding table.

Performance: The student will set the power source for amperage and polarity. The student will tack weld the two pieces of 3/8" plate into a T-joint configuration using the E6011 electrodes. The student will apply 15 overlapping stringer beads in the vertical, bottom to top, position.

Standard: The overlapping stringer beads will be inspected for uniform width, length, height, overlaps, legs, face and ripple appearance. Seventy-five of the welds will meet the standard.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:

1. Completion of required selected projects.
2. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies:

Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 3/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 05/22/2012

Lassen Community College Course Outline

WT 38 Welding Theory & Practice – Gas Metal Arc Welding

1.0 - 3.0 Units

I. Catalog Description

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 for a total of three enrollments, not to exceed three units, or as required for certification by the American Welding Society D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Three Enrollments not to exceed three units, or Unlimited Per AWS Certification Requirements
Open Entry/Open Exit: Open Entry/Exit
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

One Unit:

1. Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on 10G steel plate with CO2 shielding and ER70S .035" diameter fill wire.
2. Design and fabricate two projects using 16G-10G steel, CO2 shielding, ER70S .035" diameter fill wire, and the gas metal arc welding process.
3. Complete an AWS (American Welding Society) certification on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.

Two Units:

1. Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on 10G steel plate with CO2 shielding and ER70S .035" diameter fill wire.
2. Design and fabricate four projects using 16G-10G steel, CO2 shielding, ER70S .035" diameter fill wire, and the gas metal arc welding process.
3. Complete two AWS (American Welding Society) certifications on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.

Three Units:

1. Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on 10G steel plate with CO2 shielding and ER70S .035" diameter fill wire.
2. Design and fabricate six projects using 16G-10G steel, CO2 shielding, ER70S .035" diameter fill wire, and the gas metal arc welding process.
3. Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed industry standards using gas metal arc welding (GMAW) on 10G aluminum plate with argon shielding and ER 4043 .035" fill wire.
4. Complete three AWS (American Welding Society) certifications on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.

B. Course Objectives

Upon completion of this course the student will be able to:

One Unit:

1. Demonstrate the skills needed to safely set up and operate gas metal arc welding (GMAW) equipment.
2. Design and construct four welding projects utilizing the gas metal arc welding (GMAW) process which meet accepted industry standards.

Two Units:

1. Demonstrate the skills to safely set up and operate gas metal arc welding (GMAW) equipment.
2. Prepare and complete American Welding Society (AWS) welding certification for GMAW in the 3F position.
3. Prepare and complete American Welding Society (AWS) welding certification for GMAW in the 4F position.
4. Demonstrate skills needed to complete course objectives for the one unit course.

Three Units:

1. Demonstrate the skills to safely set up and operate gas metal arc welding (GMAW) equipment.
2. Demonstrate the skills needed to weld non-ferrous metals with the gas metal arc welding (GMAW) process.
3. Design and construct two welding projects, on non-ferrous metals, utilizing the gas metal arc welding (GMAW) process.

IV. Course Content

One Unit:

A. Safety precautions
    1. Electrical shock
    2. Radiation hazards
    3. Compressed gases
    4. Air contamination
    5. Emergency shop procedures

B. Project design
    1. Dimensioned drawings
    2. Isometric views
    3. Materials list
    4. Cost estimate

C. Project procedures
    1. Construction steps
    2. Identify rcognized joint designs
    3. Tacking procedures
    4. Fixturing
D. Equipment setup
    1. Voltage setting
    2. Wire speed
    3. Shielded gas setting
    4. Filler rod type and diameter
E. Welding preparation procedure
    1. Flat stringers - overlaps w/stop-starts
    2. Horizontal T- joints (2F)
    3. Vertical T-joints (3F)
    4. Overhead T-joints (4F)

Two Units:

A. Safety precautions
    1. Electrical shock
    2. Radiation hazards
    3. Compressed gases
    4. Air contamination
    5. Emergency shop procedures
B. AWS Certifiction
    1. Set up of materials
    2. Tacking procedures
    3. Fixturing
    4. Welding sequence
    5. AWS code requirements for testing
C. Equipment Setup
    1. Voltage setting
    2. Wire speed
    3. Shielding gas setting
    4. Filler rod

Three Units:

A. Safety precautions
    1. Electrical shock
    2. Radiation hazards
    3. Compressed gases
    4. Air contamination
    5. Emergency shop procedures
B. Non-ferrous metals
    1. Identification
    2. Preparation
    3. Fixturing
C. Equipment Setup
    1. Voltage setting
    2. Wire speed
    3. Shielding gas setting
    4. Filler rod type and diameter
    5. Polarity
D. Welding procedure

1. Flat stringers - overlaps w/stop-starts
2. Horizontal T-joints (2F)
3. Vertical T-joints (3F)
4. Overhead T-joints (4F)

E. Project Procedures
1. Dimensioned drawings
2. Material list
3. Cost estimate
4. Construction steps

V. Assignments

A. Appropriate Reading

Standard text: "Welding Principles and Practices," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of course content by demonstrating application of the gas metal arc welding (GMAW) process to selected projects which meet accepted industry standards.

C. Expected Outside Assignments

None

D. Specific Assignments that Demonstrate Critical Thinking

Student will be required to demonstrate understanding of gas metal arc welding (GMAW) practices by applying technical information to selected projects which meet accepted industry standards. An example of the critical thinking and demonstration of welding techniques would be the following:
Given: Two 4" x 7" x 3/8" low-carbon steel plates, FCAW power source, fixturing booth, chipping hammer, wire brush, electric arc helmet, leather coat, leather gloves, shielding gas and flowmeter.
Performance: The student will set the power source for voltage and wire speed. The student will set the shielding gas flowmeter. The student will demonstrate safe application of the flux cord wire, using the multiple stringer bead technique to a T-joint in the 2F position. A total of 15 overlapping beads will be applied to each side of the T-joint.
Standard: The coupon will be visually inspected for weld defects after each bead application. The stringer beads shall be free of defects, to include: Porosity, slag inclusions, lack of fusion, undercut. There shall be equal legs and a flux face. Ninety percent of the welds shall meet the standard.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:

1. Completion of required selected projects.
2. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)

Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 3/27/1990
Revised By: John Mulcahy
Latest Curriculum/Academic Standards Committee Revision Date: 11/18/2008

Lassen Community College Course Outline

WT 39 Welding Theory & Practice – Gas Tungsten Arc Welding
1.0 - 3.0 Units

I. Catalog Description

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 for a total of three enrollments, not to exceed three units, or as required for certification by the American Welding Society D1.1, Section 4.1.3. (Instructor Authorization Required for Course Repetition.)

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Open Entry/Open Exit: Open Entry/Exit
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

One Unit:

1. Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed the American Welding Society D1.1 Structural Welding Code standards), using gas tungsten arc welding (GTAW) on 16G steel plate with 2% thoriated tungstens and ER 70S fill rod.
2. Design and fabricate two projects using 16G steel, argon shielding, ER70S fill wire, and the gas tungsten arc welding process.
3. Complete an AWS (American Welding Society) certification on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process.

Two Units:

1. Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed the American Welding Society D1.1 Structural Welding Code standards), using gas tungsten arc welding (GTAW) on 16G steel plate with 2% thoriated tungstens and ER 70S fill rod.
2. Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed industry standards), using gas tungsten arc welding (GTAW) on 16G stainless steel plate with 2% thoriated tungstens and ER 308 fill rod.
3. Design and fabricate two projects using 16G stainless steel, argon shielding, ER308 fill wire, and the gas tungsten arc welding process.
4. Complete two AWS (American Welding Society) certifications on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process.

Three Units:

1. Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed the American Welding Society D1.1 Structural Welding Code standards), using gas tungsten arc welding (GTAW) on 16G steel plate with 2% thoriated tungstens and ER 70S fill rod.
2. Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed industry standards), using gas tungsten arc welding (GTAW) on 16G stainless steel plate with 2% thoriated tungstens and ER 308 fill rod.
3. Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed industry standards), using gas tungsten arc welding (GTAW) on 16G aluminum plate with pure tungsten and ER4043 fill rod.
4. Design and fabricate two projects using 16G aluminum, argon shielding, ER 4043 fill wire, and the gas tungsten arc welding process.
5. Complete three AWS (American Welding Society) certifications on steel plate with ER70S, using the GTAW (gas tungsten arc welding) process.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate the skills needed to safely setup and operate gas tungsten are welding (GTAW) equipment.
2. Design and construct four welding projects utilizing the gas tungsten are welding (GTAW) process which meet accepted industry standards.

IV. Course Content

A. Safety precautions
    1. Electrical shock
    2. Rediation hazards
    3. Compressed gases
    4. Air contamination
    5. Emergency shop procedures

B. Project design
    1. Dimensioned drawings
    2. Isometric views
    3. Materials list
    4. Cost estimate

C. Project procedures
    1. Construction steps
    2. Identify recognized joint designs
    3. Tacking procedures
    4. Fixturing

D. Equipment setup
    1. Polarity setting
    2. Heat range & current control
    3. High frequency setting
    4. Flowmeter
    5. Electrode type & diameter
    6. Filler rod type & diameter

E. Welding preparation procedure
   1. Flat stringers - mild steel, stainless steel, aluminum
   2. Flat T-joints - mild steel, stainless steel, aluminum
   3. Vertical T-joints - mild steel, stainless steel, aluminum

V. Assignments

A. Appropriate Reading

College text:"Welding Principles & Applications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of course content by demonstrating application of the gas tungsten arc welding (GTAW) process to selected projects which meet accepted industry standards.

C. Expected Outside Assignments

None

D. Specific Assignments that Demonstrate Critical Thinking

Student will be required to demonstrate understanding of gas tungsten arc welding (GTAW) practices by applying technical information to selected projects which meet accepted industry standards. An example of the critical thinking and demonstration of welding techniques would be the following:
Given: GTAW power source, shielding gas, torch components, 20 1" x 4" x 16 gauge austenitic stainless steel, GTAW helmet, leather gloves, leather coat, 308 X 1/16" diameter fill rod, welding bench.
Performance: The student will set the power source and shielding gas for stainless steel application. The student will tack weld two 16 gauge stainless steel strips into a T-joint. The student will setup the T-joint in the 3F position. The student will weld one bead, using 308 fill rod, vertical - bottom up.
Standard: The stringer beads will be inspected for length, appearance, width, ripple configuration, bead height, fusion and penetration. The joint designs will be subjected to a destructive bend test. Eighty percent of the welds must meet the standard.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
1. Completion of required selected projects.
2. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)

Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 3/27/1990
Revised By: John Mulcahy
Latest Curriculum/Academic Standards Committee Revision Date: 11/18/2008

Lassen Community College Course Outline

WT 40 Oxyacetylene Welding — 3.0 Units

I. Catalog Description

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

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Not Repeatable, Take 1 Time
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Safely setup and perform a minimum of ten welds for each of four AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that meet or exceed industry standards.
2. Perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that pass industry standards for visual and destructive testing.
3. Perform a minimum of ten 7" manual and track burner cuts on 3/8", ½", and 1" steel that are 90 degree cuts, minimal slag, and no gouging, using oxyacetylene cutting.
4. Perform a minimum of ten 7" manual cuts on 10G steel that meet or exceed industry standards, using plasma cutting.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe handling and use of the oxyacetylene equipment.
2. Demonstrate the manipulative skills necessary to weld selected joint designs with the oxyacetylene process to shop standards.
3. Demonstrate the manipulative skills necessary to perform oxyacetylene and plasma cutting.

IV. Course Content

A. Safety Precautions
   1. Oxyacetylene equipment
   2. Oxygen & acetylene cylinders
   3. Oxygen & acetylene regulators
   4. Oxyacetylene welding torches & tips
   5. Oxyacetylene flame types and adjustments

B. Oxyacetylene Welding
   1. Torch angles
   2. Torch motion
   3. Flat - no fill
   4. Flat - fill
   5. Flat - open butt
   6. Vertical - open butt
   7. Overhead - open butt
   8. T-joint -horizontal - 2F
   9. T-joint - vertical- 3F
   10. T-joint - overhead- 4F
   11. Lap joint
   12. Edge joint
   13. Outside corner
   14. Oxyacetylene welding project

C. Oxyacetylene & Plasma Cutting Torches, Equipment and Accessories
   1. Cutting tips
   2. Cleaning/maintaining
   3. Selecting and setting cutting pressures
   4. Manual & semi-automatic cutting equipment
   5. Oxyacetylene cutting project
   6. Plasma cutting project

V. Assignments

A. Appropriate Readings

College Text: "Welding Principles & Applications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of course content by demonstrating application of specific welding and cutting operations which meet shop standards.

C. Expected Outside Assignment

None

D. Specific Assignments that Demonstrate Critical Thinking

Students will be required to demonstrate understanding of welding and cutting practices by applying technical information to multiple manipulative performance objectives which meet welding department specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
1. Completion of required manipulative performance objectives
2. Participation in classroom learning activities

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)

Gauntlet leather welding gloves
Safety glasses
Leather "logging" type boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 02/19/2013

Lassen Community College Course Outline

WT 42 Intermediate Shielded Metal Arc Welding 3.0 Units

I. Catalog Description

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.)

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Qualification Requirements
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.
2. Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER7018 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.
3. Complete two limited and one unlimited thickness AWS (American Welding Society) qualifications, using the shielded metal arc welding process.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate the skills needed to setup and operate shielded metal arc welding (SMAW) equipment safely.
2. Demonstrate the manipulative skills needed to make successful welds utilizing the shielded metal arc welding (SMAW) process that will comply with industry standards.

IV. Course Content

A. Safety Precautions
   1. Working conditions
   2. Personal protection
   3. Air contamination

4. Electrical shock
5. Radiation hazards

B. Shielded Metal Arc Welding - E6011 - 5/32"
1. Current settings
2. Arc length
3. Electrode angle
4. Travel speed
5. Stringer beads
6. Padded plate
7. T-plate - horizontal 2F
8. T-plate - vertical-3F
9. T-plate - overhead-4F

C. Shielded Metal Arc Welding - E7018 - 5/32"
1. Current settings
2. Arc length
3. Electrode angle
4. Travel speed
5. Stringer beads
6. Padded plate
7. T-plate - horizontal - 2F
8. T-plate - vertical- 3F
9. T-plate - overhead-4F

V. Assignments

A. Appropriate Reading
Standard text:"Welding Principles and Applications,"and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments
Students will apply technical skills and understanding of course content by demonstrating application of the shielded metal arc welding (SMAW) process to specific joint designs which meet shop specifications.

C. Expected Outside Assignments
None

D. Specific Assignments that Demonstrate Critical Thinking
Students will be required to demonstrate understanding of the shielded metal arc welding (SMAW) process by applying technical information to multiple manipulative performance objectives which meet welding department specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
1. Completion of required manipulative performance objectives.
2. Participtaion in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)

Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: **02/05/2013**

Lassen Community College Course Outline

WT-43 Advanced Shielded Metal Arc Welding 3.0 Units

I. Catalog Description

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.)

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Qualification Requirements
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.
2. Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER7018 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.
3. Complete two limited and two unlimited thickness AWS (American Welding Society) qualifications, using the shielded metal arc welding process.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate the skills and knowledge needed to setup and operate the shielded metal arc welding (SMAW) equipment safely.
2. Demonstrate the manipulative skills needed to make successful welds utilizing the shielded metal arc welding (SMAW) process that will comply with industry standards.
3. Demonstrate the setup of a specified welding certification procedure.
4. Apply the shielded metal arc welding (SMAW) process to a qualification joint design recognized by the American Welding Society.

IV. Course Content

A. Safety Precautions

1. Working conditions
2. Personal protection
3. Air contamination
4. Electrical shock
5. Radiation hazards

B. Shielded Metal Arc Welding - E7024 - 1/8" & 5/32"
1. Current settings
2. Arc length
3. Electrode angle
4. Travel speed
5. Stinger beads
6. Padded plate
7. T-plate - horizontal - 2F
8. T-plate - vertical-3F
9. T-plate - overhead-4F

C. Shielded Metal Arc Welding - C.R.E.S. 308
1. Current settings
2. Arc length
3. Electrode angle
4. Travel speed
5. Stringer beads
6. Padded plate
7. T-plate - horizontal-2F
8. T-plate - vertical-3F

D. Certification Procedure
1. Joint design
2. Filler rod selection
3. Pre and postheat requirements
4. Bead sequence
5. Bead application
6. Polarity
7. Amperage

V. Assignments

A. Appropriate Readings
Standard text:"Welding Principles & Appllications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments
Students will apply technical skills and understanding of course content by demonstrating application of the shielded metal arc welding (SMAW) process to recognized joint designs which meet industry and shop standards.

C. Expected Outside Assignments
None

D. Specific Assignments that Demonstrate Critical Thinking
Students will be required to demonstrate understanding of welding with the shielded metal arc welding (SMAW) process by applying technical information to multiple manipulative performance objectives which meet welding department and industry specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:

1. Completion of required manipulative performance objectives.
2. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)

Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 02/05/2013

Lassen Community College Course Outline

WT-44 Gas Metal Arc Welding 3.0 Units

I. Catalog Description

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.)

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Qualification Requirments
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Safely setup and perform a minimum of ten welds for each of the welding positions using ER70S .035" electrodes, welds shall meet or exceed the AWS D1.1 Structural Welding Code standards, using GMAW spray transfer on steel.
2. Safely setup and perform a minimum of ten welds for each of the welding positions, using ER71T electrodes, welds shall meet or exceed the AWS D1.1 Structural Welding Code standards, FCAW on steel.
3. Safely setup and perform a minimum of ten welds for each of the welding positions using GMAW, 4043 .035 electrode.
4. Complete two GMAW and two FACW AWS qualifications.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe handling and use of the GMAW and FCAW equipment.
2. Demonstrate the manipulative skills necessary to weld selected joint designs with the GMAW and FCAW process.
3. Demonstrate the manipulative skills necessary to weld ferrous and nonferrous materials with the GMAW process.

IV. Course Content

A. Safety Precautions
   1. Electrical shock
   2. Radiation hazards
   3. Compressed gases

4. Air contamination
5. Emergency shop procedures

B. GMAW/FCAW Setup
1. Contact tips
2. Diffusers
3. Filler metal selection

C. GMAW/FCAW Power Source Settings
1. Polarity settings
2. Amperage control
3. Voltage control
4. Wire speed

D. GMAW/FCAW Flowmeter
1. Shielding gas selection
2. Flowmeter components
3. Flowmeter settings

E. Establishing an Arc
1. Filler metal extension
2. Welding gun angles

F. Weld Bead Parametere
1. Bead width
2. Penetration
3. Ripple appearance
4. Travel speed
5. Push method
6. Drag method

G. Selected Joint Designs - Mild Steel
1. Flat
2. T-joint - horizontal-2F
3. T-joint - vertical-3F
4. T-joint - overhead-4F
5. Lap joint

H. Selected Joint Designs - Aluminum
1. Flat
2. T-joint - horizontal-2F
3. T-joint - vertical-3F
4. T-joint - overhead-4F

V. Assignments

A. Appropriate Readings

Standard text:"Welding Principles & Applications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments

Students will apply technical skills and understanding of course content by demonstrating application of the GMAW and FCAW process on specific joint designs which meet welding department specifications.

C. Expected Outside Assignments

None

D. Specific Assignments that Demonstrate Critical Thinking
Students will be required to demonstrate an understanding of GMAW and FCAWconcepts and practices by applying the technical information to multiple manipulative performance objectives which meet welding department specifications.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
1. Completion of required manipulative performance objectives and projects.
2. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)
Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 03/19/2013

Lassen Community College Course Outline

WT-45 Gas Tungsten Arc Welding — 3.0 Units

I. Catalog Description

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.)

Transfers to CSU only
153 Hours Lab
Scheduled:

II. Coding Information

Repeatability: Unlimited Per AWS Qualification Requirements
Grading Option: Graded or Pass/No Pass
Credit Type: Credit - Degree Applicable
TOP Code: 095650

III. Course Objectives

A. Course Student Learning Outcomes

Upon completion of this course the student will be able to:

1. Safely setup and perform a minimum of ten welds for each of fifteen AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on steel, stainless steel, and aluminum, using the gas tungsten arc welding process (GTAW).
2. Fabricate watertight and airtight joint designs on steel, stainless steel, and aluminum, to welding shop standards, using the gas tungsten arc welding (GTAW) process.
3. Complete a 1F, 2F, 3F, and 4F AWS (American Welding Society) qualifications on steel plate, using the GTAW (gas tungsten arc welding) process.

B. Course Objectives

Upon completion of this course the student will be able to:

1. Demonstrate safe handling and use of gas tungsten arc welding (GTAW) equipment.
2. Demonstrate the manipulative skills necessary to weld select joint designs with the gas tungsten arc welding (GTAW) process.
3. Demonstrate the manipulative skills necessary to weld ferrous and nonferrous materials with the gas metal arc welding (GMAW) process which meet welding department specifications.

IV. Course Content

A. Safety Precautions
   1. Electircal shock
   2. Radiation hazards
   3. Compressed gases

4. Air contamination
5. Emergency shop procedures

B. GTAW Torch Setup
1. Torch bodies
2. Collet bodies
3. Collet
4. Ceramic cups
5. Tails/caps
6. Tungsten electrodes

C. GTAW Power Source Settings
1. Polarity settings
2. Amperage control
3. Postflow settings
4. High frequency adjustments

D. GTAW Flowmeter
1. Shielding gas selection
2. GTAW flowmeter components
3. Flowmeter settings

E. Establishing an Arc
1. Assembling the GTAW torch
2. Tungsten electrode extension
3. Torch angle and distance from workpiece

F. Weld Bead Parameters
1. Bead width
2. Penetration
3. Ripple appearance
4. Travel speed

G. Selected Joint Designs - Mild Steel
1. Flat - no fill
2. Flat - fill
3. Closed butt - flat
4. Closed butt - vertical
5. T-joint - horizontal-2F
6. T-joint - vertical-3F

H. Selected Joint Designs - Stainless Steel
1. Flat - no fill
2. Flat - fill
3. Closed butt - flat
4. Closed butt - vertical
5. T-joint - horizontal-2F
6. T-joint - vertical-3F

I. Selected Joint Designs - Aluminum
1. Flat - no fill
2. Flat - fill
3. Closed butt - flat
4. Closed butt - vertical
5. T-joint - horizontal-2F
6. T-joint - vertical-3F

V. Assignments

A. Appropriate Readings
Standard text:"Welding Principles & Applications," and/or trade manuals will be primary sources of course readings. Additional information sources will include product and use guides from industry manufacturers to enhance the learning process.

B. Writing Assignments
Students will apply technical skills and understanding of course content by demonstrating application of the gas tungsten arc welding process on specific joint designs and material types which meet welding department specifications.

C. Expected Outside Assignments
None

D. Specific Assignments that Demonstrate Critical Thinking
Students will be required to demonstrate understanding of gas tungsten arc welding (GTAW) concepts and practices by applying the technical information to multiple manipulative performance.

VI. Methods of Evaluation

Methods for determining student grades will be accomplished by the following:
1. Completion of required manipulative performance objectives.
2. Participation in classroom learning activities.

VII. Methods of Delivery

Check those delivery methods for which, this course has been separately approved by the Curriculum/Academic Standards Committee.

☑ Traditional Classroom Delivery ☐ Correspondence Delivery

☐ Interactive Television Delivery ☐ Online Delivery

Demonstration/Laboratory

VIII. Representative Texts and Supplies

"Welding Principles and Applications", Jeffus, Larry. Delmar Publishers, 2008, Sixth Edition, ISBN 1-4180-5275-2

Supplies: (required)
Gauntlet leather welding gloves
Safety glasses
Leather "logging type" boots
Cuffless, heavy cotton workpants, in good repair
Ear plugs, pliers w/cutters, and welding hat.

IX. Discipline/s Assignment

Welding Technology

X. Course Status

Current Status: Active
Original Approval Date: 2/27/1990
Revised By: Kory Konkol
Latest Curriculum/Academic Standards Committee Revision Date: 02/05/2013

Appendix:

B

Annual Update Since Last IPR

Program Review Annual Update

Approved by Senate for Instructional Program Review Updates on September 10, 2013

1. **Department:** Welding Technology

2. **Reporting year:** 2013-2014

3. **Names of the individuals participating in the review:** Kory Konkol, Welding Technology Instructor

4. **Progress Report: Review previous IPR or NIPR and/or annual update. Describe progress made on any recommendations and any changes made within the program.**

    1. Application to become an AWS Accredited Testing Facility (auditors travel expenses $2,300; on-site audit $4,260; equipment maintenance schedule $1,500 per year) *In-progress*
        - Planning for the development of a quality assurance manual

    2. Improve/modify shop ventilation and ducting. $15,000 - $20,000 *In-progress*
        - Partial work is being completed by the welding instructor/classes in spring 2014
        - Work request will be made for external contractors during 2013-2014 year

    3. Develop curriculum in conjunction with the Gunsmithing instructors. The purpose is to move the current course offerings from the gunsmithing program to the welding department. Modify facilities and purchase eight GTAW units to accommodate gunsmithing/welders. $20,000 *Completed*
        - Purchased in 2012 and 2013 and classes are being held since fall 2013

    4. Attend FABTECH/AWS seminars to maintain credentials as a CWI and CWE (Certified Welding Inspector and Certified Welding Educator). Expiration 2013. $3,500 *Completed*
        - In Fall 2012 the instructors attended FABTECH/AWS seminars

    5. Install new doors in the classroom with windows (3) and install exhaust fan for ventilation. $3,000 - $5,000. *Terminated*

    6. Develop new curriculum for the Welding Technology Program and make current lectures available online through Moodle. *Not Started*

    7. Purchasing of our own cylinders to avoid paying rental fees. $4,500 *Not Started*

    8. Develop articulation agreements (2+2) with the local High Schools in the area. *Completed*
        - Completed in 2012 with Lassen High School District

    9. Continue with our current advertising in the Lassen Times and develop other avenues. *Completed/Ongoing*

    10. Recommend that the spring 2014 IT-72 class remove the structure from the rear of the welding shop. This will meet DSA compliance. The class can also construct replacement workbenches to be positioned along the North wall. *In-progress*
        - Waiting on DSA assessment

11. New electrical outlets will need to be installed along the North wall along with fluorescent lighting. This will replace the current area being used by the students to prep and grind material to be welded. *In-progress*
    - Waiting on DSA assessment

12. Contractor or maintenance department will need to remove mezzanine located in the construction trades building to meet DSA compliance. *In-progress*
    - Waiting on DSA assessment

13. Electrical outlets mounted to the underside of the mezzanine will need to be relocated. The current outlets are being utilized by eight welding machines, which are used for gunsmithing classes. *In-progress*
    - Waiting on DSA assessment

5. Outcome Assessment (SLOs/PSLOs/AUOs):

Of the courses taught in 2012-2013, 13 of 14 had findings reported. Reported findings showed that 96% of the SLOs were met or partially met.

Course	Finding	Action Plan
WT 20	Final	None
WT 21	Final	None
WT 22	Final	None
WT 23	Final	In-Progress
WT 36	Final	None
WT 37	Final	None
WT 38	Final	None
WT 39	Final	None
WT 40	Final	None
WT 42	Final	None
WT 43	None	None
WT 44	Final	None
WT 45	Final	None

a. Specify any emerging needs based on assessment of outcomes (SLO, PSLO or AUO).
b. Specify any planning or budget changes (ie. human, facilities, equipment, technology, financial, professional development) based on assessment of outcomes assessment.
c. Include any examples of changes that resulted in improved SLO, PSLO and/or AUO findings.

During the 2012-2013year, 28 assessments 21 SLO assessments were completed with 10 meeting the achievement target, 10 partially meeting the achievement target and 1 not meeting the achievement target. Emerging needs are as follows:

- Instructional supply budget (Shielding gases) $1,200.00 increase (Student/program demand)
- Welding equipment repair $1,000.00 increase (Student/program demand)
- The welding instructor will be attending a week-long seminar this summer (lab/lecture) sponsored by Weld-Ed, in the area of design, assembly and robotics.

6. Curriculum:
Welding for artists (WT 50) in the development process and is anticipated for approval spring 2014

7. **Program Emerging Needs Assessment: Describe needs that have developed since the previous review. Consider emerging needs in staffing, equipment, training, facilities, or funding, Include data sources in the previous item that support emerging program needs.**
    - Instructional supply budget (Shielding gases) $3,000.00 increase (Student/program demand)
    - Welding equipment repair $1,000.00 increase (Student/program demand)
    - Investigate Torchmate courses and CNC cutting table and accessories ($20,000) (Program growth, sustainability, FTES generating, campus ops, student survey 2013)
    - Install carpeting in the classroom to improve acoustics – Topic came up during recent peer evaluation (fall 2013).
    - Install new carpet ($5,000) (fall 2013 peer evaluations)

8. **Progress and Reprioritization of Recommendations:**

a. **Review the prioritized recommendations in the previous program review.**
b. **Record outcomes of items in the planning agendas for each section.**
c. **Specify any changes in priority as well as any additions or deletions.**
d. **Provide updated planning agenda forms for each planning committee.**

Table 1. 2013-2014 Welding Technology Prioritized Recommendations Requiring Institutional Action for Inclusion in Educational Master Plan

Strategic Goal	Planning Agenda Item(s)	Implementation Timeframe	Estimated Cost	Expected Outcome
1	AWS Accreditation: Application	2015-2016	2,300.00	AWS accreditation
1	Set-up and equipment maintenance schedule	2015-2016	1,500.00	AWS accreditation
1	Additional costs to meet the requirements of an on-site audit	2015-2016	4,260.00	AWS accreditation
1	Increase instructional supply budget (Shielding gases)	2015-2016	3,000.00	To meet student demand
1	Increase welding equipment repair budget	2015-2016	1,000.00	Sustainability of equipment
1	Investigate Torchmate courses and CNC cutting table and accessories	2015-2016	20,000.00	AWS accreditation

Table 2. 2013-2014 Welding Technology Prioritized Recommendations Requiring Institutional Action for Inclusion in Human Resource/Professional Development Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome

Table 3. 2013-2014 Welding Technology Prioritized Recommendations Requiring Institutional Action for Inclusion in Facilities Master Plan

Strategic Goal	Planning Agenda Item(s)	Implementation Timeframe	Estimated Cost	Expected Outcome
3	20 stools	2015-2016	1,000.00	Safety
3	New carpet	2015-2016	5,000.00	New carpet

Table 4. 2013-2014 Welding Technology Prioritized Recommendations Requiring Institutional Action for Inclusion in Institutional Technology Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome

Table 5. 2013-2014 Welding Technology Prioritized Recommendations Requiring Institutional Action for Inclusion in Student Services Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome

9. **Additional Information: Describe or note additional information pertinent to the program, particularly information which supports new needs or growth or that documents program successes.**

- Built wood splitter in 2013 and raffled off tickets which provided $3200 for the welding scholarship
- Releasing a new course Welding for artists to be offered in fall 2014
- Built a new cutting table in 2013
- Plans for increased high school students (2+2) visits

Lassen College
Instructional Program Review - Annual Update
Annual Update to IPRs completed on either 2-yr or 4-yr rotations

All programs will complete an annual review and update. This summary and related documents serve to provide annual input to the planning and budgeting processes. Relying on data provided, student learning outcome results and dialog, and advisory committee input (career/technical programs only), document each of the items below as well as any additional information pertinent to the program's success or needs.

Progress Report
Review previous IPR and/or annual update. Describe progress made on any recommendations. Describe any changes made within the program.

Progress made since 2011 welding IPR per recommendations:

Curriculum A. Courses:
(Recommendation) Collaborate with gunsmithing program to offer gunsmithing welding classes in the Welding Technology program.
(Progress) Currently, four welders are in the process of being purchased from 2012/2013 CTE money to accommodate gunsmithing students. Inactivated course outlines WT-31 and WT-32 are being modified for submission and expected to offer the first classes in the Fall of 2013.

Curriculum D. Articulation/Integration of Curriculum:
(Recommendation) Work on 2+2 agreements with Lassen High and other outlying schools.
(Progress) Changed course outlines for WT-36 and WT-37 and approved through curriculum to accommodate a one-unit transfer from high schools for each class. Have since completed agreements with Modoc High and Lassen High.

Personnel and Support Services, B. Professional Development:
(Recommendation) Attend FABTECH welding expo.
(Progress) Used 2012/2013 CTE grant money to attend welding expo in November 2012.

Facilities/Equipment, B. Equipment:
(Recommendation) Equipment needs will be based on meeting those requirements to become certified testing facility.
(Progress) Used 2012/2013 CTE money to purchase a digital multimeter that will be used to verify the output (Amps) of the welding equipment. Also purchased books to create a library that will be available to students per American Welding Society (AWS) accreditation requirements.

Other:
- Created a new classroom (downstairs) in the welding shop that is ADA compliant. The classroom now uses smart-board technology.
- Re-organized/re-painted tool room and put welding rod ovens in service to meet AWS accreditation requirements.
- Started construction of new welding tables to accommodate gunsmithing welders and equipment.
- Moved outside shed and organized our metal supply by color-coding to meet AWS accreditation requirements.

Student Learning Outcomes
Note emerging needs based on assessment of student learning outcomes. Note any planning or budget changes based on assessment of student learning outcomes.

None at this time

Curriculum

Review curriculum status of previous IPR. Note any curricular changes made within the instructional program since the last review.

In order to accommodate a 2+2 agreement with area high schools, changes were made to WT-36 and WT-37 course outlines. The changes were in the form of clarifying what performance objectives were expected from those taking one, two or three units.

Course outlines were revised for the following classes: IT-72, WT-38, WT-39, WT-40, and WT-42 through 45. Revision went before curriculum on 1/15/13. Revision only included removing the word "certification" and replacing it with the word "qualification".

Program Needs Assessment

Describe new needs that have developed since the previous review. Consider new needs in staffing, equipment, training, facilities, or funding. Make sure to include data sources in the previous item that support emerging program needs.

- This is a new need that wasn't requested in the 2012-2013 grant "wish list", but was addressed in the welding program 2011 IPR (sections 4A, 5A and 5B). In order to become a certified testing facility an audit will need to be performed, confirming that the welding technology program has met all of the requirements outlined by the AWS.

- This is an old need that wasn't completed in its entirety. Meaning, there was a need to purchase eight new gas tungsten arc welders (GTAW) to accommodate the new gunsmithing welding courses (outlined in 2011 welding IPR section 5B). Half of that need was met; therefore, four GTAW welders are still needed to fulfill that obligation. With a total of eight GTAW welders, in addition to other welders already available in the welding shop, the student to welder ratio should come close to 1:1. Currently, the ratio is more like 6-7:1 (student/welders).

  Note – this is a required course that's needed to complete the gunsmithing program.

Additional Information

Describe or note additional information pertinent to the program, particularly information which supports new needs or growth or that documents program successes.

Currently working on completing those goals outlined in the 2011 welding IPR.
The success of any trades program is gauged by the quality of training a student receives in his or her field. That training needs to be recognized throughout the industry and the United States. By becoming an AWS certified testing facility, we would be able to offer that recognition to our students, therefore increasing their employability.

Progress and Reprioritization of Recommendations

Review the prioritized recommendations in the previous program review. Record outcomes of items in the planning agendas for each section. Note any changes in priority as well as any additions or deletions. Provide updated planning agenda forms for each planning committee.

Below are a list by items that were purchased and their expected outcomes. (All have been met)

Note – surplus ovens were used in place of item number two that will meet the necessary requirements. Money allotted for the ovens was transferred and used to purchase the four GTAW machines listed above (program needs assessment, second bullet).

- In order to become an American Welding Society (AWS) Certified Testing Facility, certain requirements need to be met. Those requirements are outlined in the AWS accredited test facility audit application, which includes the necessary pieces of equipment and materials that will need to be purchased. Below, is a list of those items along with a description of the requirement met.

Item # 1

Fluke clamp on ammeter model 375
Price $361.16

Addressed Issue

- This tool addresses the need to be able to verify the voltage and amperage output of our welding equipment prior to certifying. This is required as outlined in the AWS audit application Part XI – Measuring and Testing Equipment.

Improvement Issue

- This tool meets the requirement, which is necessary in becoming an AWS certified testing facility.

Item # 2

Keen bench welding rod-holding oven with thermometer model K-450
Price $900

Addressed Issue

- This tool addresses the need per AWS 2008 D1.1 code book section 5.3.2.1, Low Hydrogen Electrode Storage Conditions. This tool is required when using low hydrogen electrodes for performing welding certification tests. The welding rods must be removed from their hermetically stored container and immediately placed and stored in the oven while maintaining a temperature of 250 degrees fahrenheit.

Improvement Issue

- This tool meets the requirement, which is necessary in becoming an AWS certified testing facility.

Item # 3

AWS D1.1 (2010) Structural Welding Code Steel.	$393.00
AWS D1.2 (2008) Structural Welding Code Aluminum.	$150.00
AWS D1.8 (2009) Structural Welding Code Seismic Supplement.	$99.00
AWS D1.5 (2010) Structural Welding Code BridgeWelding.	$261.00
AWS A2.4 (2007) Standard Symbols for Welding and Brazing.	$111.00

Addressed Issue

- These books address the need to make available to those certifying certain reference material. This is required as outlined in the AWS audit application Part IV – Reference Documents.

Improvement Issue

- These books meet the requirement, which is necessary in becoming an AWS certified testing facility.

Item # 4

AWS - Schools Excelling through National skill Standards Education (SENSE) progam. Establishes standards for the training of entry level welders.

Price $600 - level one and two

Addressed Issue

- This program addresses the need to provide our students and those certifying the necessary material to successfully complete a certification test.
- This program also provides us access to a database of welding procedure specifications (WPS). The WPS's are required as outlined in the AWS audit application Part IV – Welding Procedure Specifications. For every certification offered a WPS needs to be followed.

Improvement Issue

- This program meets the requirement, which is necessary in becoming an AWS certified testing facility.

Item # 5

Purchase four Miller Dynasty 200 SD welding units with four contractor kits
Price $14200.00

Addressed Issue

- A 1:1 welder/student ratio will be achieved with the purchase of eight welding units along with those already available in the welding technology program.
- Offering the gunsmithng welding classes in the welding technology program will free up class space in that department allowing gunsmithing to offer more courses.
- The students productivity will go up, because more time will be spent welding and learning to weld.
- Additional objectives can be added to further enhance the gunsmithing students' specialized welding skills.

Improvement Issue

- Currently, there are two welding units available in the gunsmithing program, with a class of approximately 12-15 students. This reduces the students' amount of hands-on time welding.

_____ Date: _____

Program Faculty

Lassen College
Instructional Program Review - Annual Update
Forms for submission to planning committees

Due date: Program (i.e. 2013 Basic Skills IPR Annual Update)
Prioritized Recommendations Requiring Institutional Action for Inclusion in Education Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome
	Purchase four GTAW welders	Fall 2013/2014	$14200.00	See item #5 above
	On site audit to become a certified testing facility.	Fall 2013/2014	$3000	See program needs assessment bullet #1 above.

Due date : Program (i.e. 2013 Administration of Justice IPR Annual Update)
Prioritized Recommendations Requiring Institutional Action for Inclusion in Human Resource Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome

Due date: Program (i.e. 2015 Business IPR Annual Update)
Prioritized Recommendations Requiring Institutional Action for Inclusion in Facilities Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome

Due date: Program (i.e. 2014 Humanities IPR Annual Update)
Prioritized Recommendations Requiring Institutional Action for Inclusion in Technology Master Plan

Strategic Goal	Planning Agenda Item	Implementation Time Frame	Estimated Cost	Expected Outcome

Appendix:

C

Advertising
Spring/Fall 2013

Lassen Community College
WELDING TECHNOLOGY

Learn a Skill, Qualify, Earn a Degree or Enjoy a New Hobby

- **Job Placement Assistance**
- **Associate of Science Degree, Certificate of Achievement and Certificate of Accomplishment in Welding Technology**
- **A.W.S. Welding Qualification Tests on structural pipe and steel offered on campus**
- **Discover or upgrade your welding skills in Oxyacetylene, GMAW (MIG), GTAW (TIG), SMAW (ARC), FCAW**
- **Classes offered Monday through Saturday**
- **Courses can be taken credit/no credit. Student projects are encouraged.**

For more information contact: Kory Konkol, Welding Instructor, Certified Welding Inspector, Certified Welding Educator 251-8887.

Spring 2013 Classes Begin January 14th.
Register Today!!

Lassen Community College
WELDING TECHNOLOGY

Learn a Skill, Qualify, Earn a Degree or Enjoy a New Hobby

- **Job Placement Assistance**
- **Associate of Science Degree, Certificate of Achievement and Certificate of Accomplishment in Welding Technology**
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For more information contact: Kory Konkol, Welding Instructor, Certified Welding Inspector, Certified Welding Educator 251-8887.

Fall 2013 Classes Begin August 19th.
Register Today!!

Appendix:

D

Bureau of Labor Statistics
Employment

U.S. Bureau of Labor Statistics

Occupational Employment Statistics

Occupational Employment and Wages, May 2012

51-4121 Welders, Cutters, Solderers, and Brazers

Use hand-welding, flame-cutting, hand soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.

National estimates for this occupation
Industry profile for this occupation
Geographic profile for this occupation

National estimates for this occupation: Top

Employment estimate and mean wage estimates for this occupation:

Employment (1)	Employment RSE (3)	Mean hourly wage	Mean annual wage (2)	Wage RSE (3)
329,710	0.9 %	$18.46	$38,410	0.3 %

Percentile wage estimates for this occupation:

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	$11.88	$14.29	$17.45	$21.62	$26.99
Annual Wage (2)	$24,720	$29,730	$36,300	$44,970	$56,130

Industry profile for this occupation: Top

Industries with the highest published employment and wages for this occupation are provided. For a list of all industries with employment in this occupation, see the Create Customized Tables function.

Industries with the highest levels of employment in this occupation:

Industry	Employment (1)	Percent of industry employment	Hourly mean wage	Annual mean wage (2)
Architectural and Structural Metals Manufacturing	38,840	11.44	$16.98	$35,310
Agriculture, Construction, and Mining Machinery Manufacturing	21,990	9.06	$17.45	$36,290

Motor Vehicle Body and Trailer Manufacturing	15,930	13.20	$16.07	$33,420
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	15,480	8.13	$18.29	$38,040
Other General Purpose Machinery Manufacturing	14,410	5.81	$17.82	$37,060

Industries with the highest concentration of employment in this occupation:

Industry	Employment (1)	Percent of industry employment	Hourly mean wage	Annual mean wage (2)
Railroad Rolling Stock Manufacturing	3,620	16.45	$16.73	$34,810
Boiler, Tank, and Shipping Container Manufacturing	13,420	14.26	$18.11	$37,670
Motor Vehicle Body and Trailer Manufacturing	15,930	13.20	$16.07	$33,420
Architectural and Structural Metals Manufacturing	38,840	11.44	$16.98	$35,310
Ship and Boat Building	13,420	10.66	$19.69	$40,960

Top paying industries for this occupation:

Industry	Employment (1)	Percent of industry employment	Hourly mean wage	Annual mean wage (2)
Electric Power Generation, Transmission and Distribution	1,290	0.32	$30.21	$62,850
Scheduled Air Transportation	100	0.02	$28.50	$59,280
Natural Gas Distribution	790	0.74	$28.37	$59,000
Pulp, Paper, and Paperboard Mills	90	0.09	$28.30	$58,870
Metal Ore Mining	270	0.63	$27.47	$57,140

Geographic profile for this occupation: Top

States and areas with the highest published employment, location quotients, and wages for this occupation are provided. For a list of all areas with employment in this occupation, see the Create Customized Tables function.

States with the highest employment level in this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Texas	46,760	4.42	1.75	$18.32	$38,100
California	21,410	1.50	0.59	$19.52	$40,600
Pennsylvania	14,980	2.68	1.06	$18.11	$37,670
Louisiana	13,730	7.35	2.90	$20.20	$42,010
Ohio	13,010	2.57	1.02	$17.69	$36,800

States with the highest concentration of jobs and location quotients in this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Wyoming	2,360	8.49	3.36	$23.14	$48,130
Louisiana	13,730	7.35	2.90	$20.20	$42,010
North Dakota	2,910	7.21	2.85	$21.87	$45,500
South Dakota	2,700	6.77	2.67	$15.12	$31,440
Oklahoma	9,660	6.32	2.50	$17.75	$36,910

Top paying States for this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Alaska	690	2.16	0.85	$33.36	$69,390
Hawaii	440	0.74	0.29	$28.09	$58,430
District of Columbia	60	0.08	0.03	$27.20	$56,580
Wyoming	2,360	8.49	3.36	$23.14	$48,130
Maryland	2,460	0.98	0.39	$22.17	$46,110

Metropolitan areas with the highest employment level in this occupation:

Metropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Houston-Sugar Land-Baytown, TX	16,420	6.22	2.46	$19.37	$40,300
Los Angeles-Long Beach-Glendale, CA Metropolitan Division	5,410	1.40	0.55	$17.58	$36,570
Chicago-Joliet-Naperville, IL Metropolitan Division	5,410	1.49	0.59	$18.91	$39,340
Dallas-Plano-Irving, TX Metropolitan Division	4,430	2.11	0.83	$17.93	$37,300
Fort Worth-Arlington, TX Metropolitan Division	3,900	4.44	1.75	$15.87	$33,000
Tulsa, OK	3,790	9.16	3.62	$19.55	$40,650
Minneapolis-St. Paul-Bloomington, MN-WI	3,560	2.03	0.80	$20.37	$42,370
Atlanta-Sandy Springs-Marietta, GA	3,130	1.39	0.55	$17.48	$36,350
Milwaukee-Waukesha-West Allis, WI	3,050	3.78	1.50	$19.81	$41,210
Virginia Beach-Norfolk-Newport News, VA-NC	3,050	4.25	1.68	$20.29	$42,200

Metropolitan areas with the highest concentration of jobs and location quotients in this occupation:

Metropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Pascagoula, MS	2,170	41.06	16.22	$22.37	$46,520
Houma-Bayou Cane-Thibodaux, LA	2,290	24.75	9.78	$20.10	$41,810
Longview, TX	1,630	16.64	6.58	$16.72	$34,780
Odessa, TX	1,000	14.65	5.79	$22.20	$46,170

Farmington, NM	690	13.99	5.53	$22.91	$47,660
Elkhart-Goshen, IN	1,320	12.12	4.79	$14.90	$30,990
Wausau, WI	710	11.00	4.35	$20.04	$41,680
Beaumont-Port Arthur, TX	1,680	10.70	4.23	$21.49	$44,710
Erie, PA	1,280	10.06	3.98	$15.94	$33,150
Lafayette, LA	1,500	9.89	3.91	$19.29	$40,110

Top paying metropolitan areas for this occupation:

Metropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Anchorage, AK	200	1.16	0.46	$31.68	$65,890
Peabody, MA NECTA Division	100	1.02	0.40	$31.36	$65,220
Vallejo-Fairfield, CA	190	1.54	0.61	$30.65	$63,760
Fairbanks, AK	60	1.53	0.60	$29.44	$61,240
Honolulu, HI	370	0.85	0.34	$29.41	$61,170
Bakersfield-Delano, CA	1,320	4.80	1.90	$28.12	$58,490
Bremerton-Silverdale, WA	440	5.56	2.20	$27.46	$57,110
Grand Junction, CO	110	1.86	0.74	$25.46	$52,960
Lawrence-Methuen-Salem, MA-NH NECTA Division	60	1.09	0.43	$24.63	$51,230
Wilmington, DE-MD-NJ Metropolitan Division	420	1.31	0.52	$24.20	$50,330

Nonmetropolitan areas with the highest employment in this occupation:

Nonmetropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Kansas nonmetropolitan area	3,190	8.31	3.28	$15.84	$32,950
New Iberia nonmetropolitan area	2,590	19.25	7.61	$18.63	$38,760

Eastern Texas nonmetropolitan area	2,430	8.75	3.46	$16.72	$34,780
West Northwestern Ohio nonmetropolitan area	1,840	8.17	3.23	$16.82	$34,980
Eastern Wisconsin nonmetropolitan area	1,830	11.59	4.58	$18.67	$38,830

Nonmetropolitan areas with the highest concentration of jobs and location quotients in this occupation:

Nonmetropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
New Iberia nonmetropolitan area	2,590	19.25	7.61	$18.63	$38,760
Far Eastern North Dakota nonmetropolitan area	420	16.86	6.66	(8)	(8)
Eastern South Dakota nonmetropolitan area	1,790	14.22	5.62	$14.88	$30,950
Northeastern Wyoming nonmetropolitan area	580	11.77	4.65	$24.76	$51,500
Eastern Wisconsin nonmetropolitan area	1,830	11.59	4.58	$18.67	$38,830

Top paying nonmetropolitan areas for this occupation:

Nonmetropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Railbelt / Southwest Alaska nonmetropolitan area	390	5.36	2.12	$35.34	$73,510
Southeastern Wyoming nonmetropolitan area	220	5.87	2.32	$29.02	$60,350
Far Western North Dakota nonmetropolitan area	460	7.37	2.91	$28.77	$59,840
Upper Eastern Shore nonmetropolitan area	60	0.94	0.37	$27.90	$58,040
Southeast Alaska nonmetropolitan area	40	1.13	0.45	$27.67	$57,560

About May 2012 National, State, Metropolitan, and Nonmetropolitan Area Occupational Employment and Wage Estimates

These estimates are calculated with data collected from employers in all industry sectors, all metropolitan and

nonmetropolitan areas, and all states and the District of Columbia. The top employment and wage figures are provided above. The complete list is available in the downloadable XLS files.

The percentile wage estimate is the value of a wage below which a certain percent of workers fall. The median wage is the 50th percentile wage estimate--50 percent of workers earn less than the median and 50 percent of workers earn more than the median. More about percentile wages.

(1) Estimates for detailed occupations do not sum to the totals because the totals include occupations not shown separately. Estimates do not include self-employed workers.

(2) Annual wages have been calculated by multiplying the hourly mean wage by a "year-round, full-time" hours figure of 2,080 hours; for those occupations where there is not an hourly mean wage published, the annual wage has been directly calculated from the reported survey data.

(3) The relative standard error (RSE) is a measure of the reliability of a survey statistic. The smaller the relative standard error, the more precise the estimate.

(8) Estimate not released.

(9) The location quotient is the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average.

Other OES estimates and related information:

May 2012 National Occupational Employment and Wage Estimates

May 2012 State Occupational Employment and Wage Estimates

May 2012 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates

May 2012 National Industry-Specific Occupational Employment and Wage Estimates

May 2012 Occupation Profiles

Technical Notes

Last Modified Date: March 29, 2013

U.S. Bureau of Labor Statistics | Division of Occupational Employment Statistics, PSB Suite 2135, 2 Massachusetts Avenue, NE Washington, DC 20212-0001

www.bls.gov/OES | Telephone: 1-202-691-6569 | Contact OES

U.S. Bureau of Labor Statistics

Occupational Employment Statistics

Occupational Employment and Wages, May 2012

51-4122 Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders

Set up, operate, or tend welding, soldering, or brazing machines or robots that weld, braze, solder, or heat treat metal products, components, or assemblies. Includes workers who operate laser cutters or laser-beam machines.

National estimates for this occupation
Industry profile for this occupation
Geographic profile for this occupation

National estimates for this occupation: Top

Employment estimate and mean wage estimates for this occupation:

Employment (1)	Employment RSE (3)	Mean hourly wage	Mean annual wage (2)	Wage RSE (3)
49,430	2.4 %	$17.33	$36,060	0.8 %

Percentile wage estimates for this occupation:

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	$11.00	$13.46	$16.69	$20.51	$25.00
Annual Wage (2)	$22,880	$28,000	$34,720	$42,650	$52,000

Industry profile for this occupation: Top

Industries with the highest published employment and wages for this occupation are provided. For a list of all industries with employment in this occupation, see the Create Customized Tables function.

Industries with the highest levels of employment in this occupation:

Industry	Employment (1)	Percent of industry employment	Hourly mean wage	Annual mean wage (2)
Motor Vehicle Parts Manufacturing	8,450	1.78	$16.36	$34,030
Agriculture, Construction, and Mining Machinery Manufacturing	5,290	2.18	$17.22	$35,810

Architectural and Structural Metals Manufacturing	5,000	1.47	$16.99	$35,340
Other General Purpose Machinery Manufacturing	2,550	1.03	$17.63	$36,670
Machine Shops; Turned Product; and Screw, Nut, and Bolt Manufacturing	2,430	0.68	$16.95	$35,260

Industries with the highest concentration of employment in this occupation:

Industry	Employment (1)	Percent of industry employment	Hourly mean wage	Annual mean wage (2)
Other Transportation Equipment Manufacturing	840	2.68	$18.48	$38,440
Boiler, Tank, and Shipping Container Manufacturing	2,100	2.23	$17.96	$37,350
Agriculture, Construction, and Mining Machinery Manufacturing	5,290	2.18	$17.22	$35,810
Motor Vehicle Parts Manufacturing	8,450	1.78	$16.36	$34,030
Forging and Stamping	1,440	1.48	$16.03	$33,330

Top paying industries for this occupation:

Industry	Employment (1)	Percent of industry employment	Hourly mean wage	Annual mean wage (2)
Electric Power Generation, Transmission and Distribution	60	0.01	$34.21	$71,150
Rail Transportation	50	0.02	$23.44	$48,760
Highway, Street, and Bridge Construction	40	0.01	$22.66	$47,140
Ship and Boat Building	1,140	0.91	$21.94	$45,630
Motor Vehicle Manufacturing	1,600	0.95	$21.59	$44,910

Geographic profile for this occupation: Top

States and areas with the highest published employment, location quotients, and wages for this occupation are provided. For a list of all areas with employment in this occupation, see the Create Customized Tables function.

States with the highest employment level in this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Ohio	4,880	0.97	2.54	$16.46	$34,230
Indiana	3,860	1.37	3.62	$16.74	$34,810
Texas	3,290	0.31	0.82	$16.02	$33,320
California	3,060	0.21	0.56	$17.85	$37,120
Illinois	2,890	0.51	1.35	$17.98	$37,400

States with the highest concentration of jobs and location quotients in this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Indiana	3,860	1.37	3.62	$16.74	$34,810
South Dakota	520	1.31	3.44	$16.29	$33,880
Ohio	4,880	0.97	2.54	$16.46	$34,230
Wisconsin	2,460	0.92	2.42	$18.37	$38,200
Iowa	1,360	0.92	2.44	$16.92	$35,190

Top paying States for this occupation:

State	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Maine	80	0.13	0.34	$23.88	$49,670
Hawaii	(8)	(8)	(8)	$23.06	$47,970
Alaska	90	0.27	0.72	$22.38	$46,550
Maryland	270	0.11	0.28	$20.50	$42,640
Wyoming	230	0.82	2.16	$20.30	$42,230

Metropolitan areas with the highest employment level in this occupation:

Metropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Chicago-Joliet-Naperville, IL Metropolitan Division	1,760	0.48	1.27	$17.14	$35,650
Houston-Sugar Land-Baytown, TX	1,310	0.50	1.31	$16.93	$35,220
Detroit-Livonia-Dearborn, MI Metropolitan Division	950	1.36	3.60	$21.47	$44,660
Milwaukee-Waukesha-West Allis, WI	840	1.04	2.75	$19.36	$40,280
Los Angeles-Long Beach-Glendale, CA Metropolitan Division	830	0.21	0.57	$17.71	$36,830
Cincinnati-Middletown, OH-KY-IN	690	0.71	1.86	$14.54	$30,240
Minneapolis-St. Paul-Bloomington, MN-WI	650	0.37	0.98	$21.56	$44,840
Indianapolis-Carmel, IN	610	0.69	1.82	$15.13	$31,480
Louisville-Jefferson County, KY-IN	570	0.96	2.53	$15.16	$31,530
Cleveland-Elyria-Mentor, OH	570	0.57	1.51	$18.51	$38,500

Metropolitan areas with the highest concentration of jobs and location quotients in this occupation:

Metropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Gadsden, AL	130	3.81	10.04	$13.46	$27,990
Elkhart-Goshen, IN	400	3.71	9.78	$13.09	$27,240
Mansfield, OH	180	3.56	9.39	$11.04	$22,960
Elmira, NY	100	2.71	7.13	$17.62	$36,650

Holland-Grand Haven, MI	240	2.35	6.20	$16.25	$33,790
Longview, TX	220	2.26	5.95	$13.76	$28,620
Wausau, WI	140	2.22	5.86	$18.42	$38,320
Blacksburg-Christiansburg-Radford, VA	140	2.20	5.81	$23.35	$48,560
Waterloo-Cedar Falls, IA	190	2.12	5.58	$16.85	$35,050
Winston-Salem, NC	380	1.89	4.97	$22.68	$47,180

Top paying metropolitan areas for this occupation:

Metropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Springfield, OH	60	1.19	3.15	$25.26	$52,530
Blacksburg-Christiansburg-Radford, VA	140	2.20	5.81	$23.35	$48,560
Honolulu, HI	(8)	(8)	(8)	$23.06	$47,970
Norwich-New London, CT-RI	40	0.32	0.85	$22.90	$47,620
Winston-Salem, NC	380	1.89	4.97	$22.68	$47,180
Baltimore-Towson, MD	(8)	(8)	(8)	$22.56	$46,930
Buffalo-Niagara Falls, NY	280	0.53	1.39	$21.84	$45,430
Minneapolis-St. Paul-Bloomington, MN-WI	650	0.37	0.98	$21.56	$44,840
Detroit-Livonia-Dearborn, MI Metropolitan Division	950	1.36	3.60	$21.47	$44,660
New Haven, CT	(8)	(8)	(8)	$21.06	$43,800

Nonmetropolitan areas with the highest employment in this occupation:

Nonmetropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
West Northwestern Ohio nonmetropolitan area	1,220	5.42	14.29	$16.19	$33,670

Northern Indiana nonmetropolitan area	610	3.01	7.93	$15.26	$31,740
Southeast Iowa nonmetropolitan area	560	2.57	6.77	$17.41	$36,210
Other Ohio nonmetropolitan area	540	2.00	5.27	$17.05	$35,470
Central Indiana nonmetropolitan area	480	3.22	8.48	$16.88	$35,110

Nonmetropolitan areas with the highest concentration of jobs and location quotients in this occupation:

Nonmetropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
West Northwestern Ohio nonmetropolitan area	1,220	5.42	14.29	$16.19	$33,670
Eastern South Dakota nonmetropolitan area	470	3.74	9.85	$16.42	$34,160
Central Indiana nonmetropolitan area	480	3.22	8.48	$16.88	$35,110
Northern Indiana nonmetropolitan area	610	3.01	7.93	$15.26	$31,740
Southeast Iowa nonmetropolitan area	560	2.57	6.77	$17.41	$36,210

Top paying nonmetropolitan areas for this occupation:

Nonmetropolitan area	Employment (1)	Employment per thousand jobs	Location quotient (9)	Hourly mean wage	Annual mean wage (2)
Upper Peninsula of Michigan nonmetropolitan area	(8)	(8)	(8)	$23.55	$48,980
Central Nebraska nonmetropolitan area	100	0.95	2.50	$20.81	$43,280
West Central Kentucky nonmetropolitan area	120	0.75	1.98	$20.50	$42,640
Northeast Minnesota nonmetropolitan area	(8)	(8)	(8)	$20.29	$42,200
Western New Hampshire nonmetropolitan area	(8)	(8)	(8)	$19.96	$41,510

About May 2012 National, State, Metropolitan, and Nonmetropolitan Area Occupational Employment and Wage Estimates

These estimates are calculated with data collected from employers in all industry sectors, all metropolitan and nonmetropolitan areas, and all states and the District of Columbia. The top employment and wage figures are provided above. The complete list is available in the downloadable XLS files.

The percentile wage estimate is the value of a wage below which a certain percent of workers fall. The median wage is the 50th percentile wage estimate--50 percent of workers earn less than the median and 50 percent of workers earn more than the median. More about percentile wages.

(1) Estimates for detailed occupations do not sum to the totals because the totals include occupations not shown separately. Estimates do not include self-employed workers.

(2) Annual wages have been calculated by multiplying the hourly mean wage by a "year-round, full-time" hours figure of 2,080 hours; for those occupations where there is not an hourly mean wage published, the annual wage has been directly calculated from the reported survey data.

(3) The relative standard error (RSE) is a measure of the reliability of a survey statistic. The smaller the relative standard error, the more precise the estimate.

(8) Estimate not released.

(9) The location quotient is the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average.

Other OES estimates and related information:

May 2012 National Occupational Employment and Wage Estimates

May 2012 State Occupational Employment and Wage Estimates

May 2012 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates

May 2012 National Industry-Specific Occupational Employment and Wage Estimates

May 2012 Occupation Profiles

Technical Notes

Last Modified Date: March 29, 2013

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Appendix:

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Degrees/Certificates Awarded & Retention Data 2009 - 2012

Annual Degrees and Certificates
Associate of Science Degrees

Associate of Science Degrees	2011-12	2010-2011	2009-2010	2008-09	2007-08	2006-07	2005-06	2004-05	2003-04	2002-03	2001-02	2000-01	1999-00
Accounting	1	2	2	3	3	3	3	4	7	6	5	4	10
General Agriculture	2	0	0	2	2	4	4	2	5	1	5	3	1
Automotive Technology	0	0	2	1	1	0	0	0	1	0	1	0	0
Business Administration	0	0	0	1	2	3	4	4	5	4	6	7	9
Business Real Estate Option	0	0	0	0	0	0	0	1	0	0	0	0	0
Office Information Systems	0	0	0	0	0	0	0	2	0	3	0	5	6
Word Processing	0	0	0	0	0	0	0	1	1	0	0	1	4
Computer Office Tech	0	0	0	1	0	2	0	2	0	0	0	0	0
Office Admin Assistant	0	1	3	0	0	3	2	2	0	0	0	0	0
Computer Information Systems	0	0	0	0	0	0	1	1	3	0	2	6	4
Construction Technology	0	0	0	0	0	0	0	0	0	0	0	1	0
Correctional Science	4	7	4	6	9	6	3	0	4	3	4	1	4
Cosmetology	0	0	0	0	0	0	0	0	0	0	0	0	0
General Gunsmithing	5	1	3	5	2	3	3	1	4	0	2	4	3
Fire Technology	0	1	4	3									
Firearms Repair	5	1	3	5	2	3	2	0	4	0	3	2	2
Human Services	1	2	8	5	5	8	11	5	6	3	8	0	3
Drug & Alcohol Paraprofessional	0	2	8	5	4	8	10	5	5	4	4	0	3
Journalism	0	0	0	1	1	2	1	0	1	0	0	0	1
Math/Science	0	1	0	0	2	0	10	8	12	7	3	2	7
Power Generation Technology	0	0	0	0	1	3	2	2	0	1	0	0	0
Steam Power Operations Technology	0	0	0	0	0	0	0	0	0	2	2	0	2
Vocational Nursing	12	11	15	11	21	21	8	3	10	10	2	5	14
Welding Technology	0	1	3	1	0	0	2	1	1	0	1	0	0
TOTAL	**30**	**30**	**55**	**59**	**65**	**88**	**76**	**50**	**79**	**54**	**58**	**54**	**92**

XL	Term	Syn	Days	Times	Loc	Mod	TOD	Room	Sec Cap	Rm Cap	Enrollments Start Date	Enrollments Cen Date	Enrollments End Date	Ret Rate	Succ Primary Rate Instructor	Pri TA	Load	FTES	FTES/ FTEF
IT Industrial Technology																			
			72	**Facilities Maintenance 1**															
	09SP	4265	TTh	12:00PM- 3:45PM	1	F	D	TR 103	35	25	16	16	14	88%	53% J. Mulcahy	FR	15.00	3.1	20.7
al Technology Total:								**1 Section**			16	16	14	88%	53%		15.0	3.1	20.7
PGT - Power Generation Tech																			
PGT			**22**	**Oper/Maintenc/Safty**															
	08FA	0398	TTh	2:30PM- 3:50PM	1	F	D	TR 101A	35	35	11	11	11	92%	75% J. Mulcahy	FR	3.33	0.4	11.3
Power Generation Tech Total								**1 Section**			11	11	11	92%	75%		3.3	0.4	11.3
WT - Welding Technology																			
WT			**20**	**Power Plnt/Fld Pipe**															
	08FA	0432	T	5:00PM- 5:50PM	1	F	E	TR 103	35	25	15	12	11	100%	91% J. Mulcahy	FR	18.33	2.8	15.3
	09SP	4345	T	5:00PM- 5:50PM	1	F	E	TR 103	35	25	13	15	12	80%	27% J. Mulcahy	FR	18.33	3.5	19.1
								2 Sections			28	27	23	85%	54%		36.66	6.3	17.2
WT			**21**	**Power Plnt/Fld Pipe**															
	08FA	0433	Th	5:00PM- 5:50PM	1	F	E	TR 103	35	25	7	9	7	78%	56% J. Mulcahy	FR	3.33	2.1	63.1
	09SP	4346	Th	5:00PM- 5:50PM	1	F	E	TR 103	35	25	9	13	11	85%	54% J. Mulcahy	FR	3.33	3.0	91.1
								2 Sections			16	22	18	82%	55%		6.66	5.1	77.1
WT			**22**	**Power Plnt/Fld Pipe**															
	08FA	0434	T	4:00PM- 4:50PM	1	F	E	TR 103	35	25	3	3	3	100%	100% J. Mulcahy	FR	3.33	0.7	21.0
	09SP	4347	T	4:00PM- 4:50PM	1	F	E	TR 103	35	25	5	8	8	100%	75% J. Mulcahy	FR	3.33	1.9	56.1
								2 Sections			8	11	11	100%	82%		6.66	2.6	38.5
WT			**23**	**Power Plnt/Fld Pipe**															
	08FA	0596	Th	4:00PM- 4:50PM	1	F	E	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	FR	3.33	0.2	7.0
	09SP	4348	Th	4:00PM- 4:50PM	1	F	E	TR 103	35	25	3	3	3	100%	67% J. Mulcahy	FR	3.33	0.7	21.0
								2 Sections			4	4	4	100%	75%		6.66	0.9	14.0
WT			**36**	**Wldg Thry&prac-Oxy**															
	08SU	8377	TBA	TBA	1	F	D	TR 103	25	25	7	6	6	100%	100% J. Mulcahy	FO	22.50	0.8	3.5
	08FA	0440	S	8:00AM-10:50AM	1	F	D	TR 103	35	25	2	2	2	100%	100% N. Schwarz	XN	0.00	0.2	
	08FA	0658	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	0	0		J. Mulcahy	XR	0.00	0.0	
	08FA	0662	TBA	TBA	1	F	D	TR 103	35	25	9	7	7	100%	86% J. Mulcahy	FO	22.50	1.4	6.2
	08FA	2001	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	4	3	3	100%	100% J. Mulcahy	FR	22.50	0.9	4.0
	08FA	6046	S	8:00AM- 5:20PM	1	F	D	TR 103	35	25	2	2	2	100%	100% N. Schwarz	FN	22.50	0.5	2.4
	09SP	4350	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	2	1	100%	0% J. Mulcahy	XR	0.00	0.4	
	09SP	4351	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	7	9	8	100%	75% J. Mulcahy	FO	22.50	2.7	12.0
	09SP	4357	S	8:00AM-11:50AM	1	F	D	TR 103	35	25	3	3	2	67%	67% N. Schwarz	FN	22.50	0.9	4.0
	09SP	4361	S	8:00AM-10:40AM	1	F	D	TR 103	35	25	0	1	1	100%	100% N. Schwarz	XN	0.00	0.1	
	09SP	4894	TBA	TBA	1	F	D	TR 103	35	25	6	11	11	100%	55% J. Mulcahy	FR	22.50	1.7	7.5
								11 Sections			42	46	43	98%	77%		157.50	9.6	6.1
WT			**37**	**Wldg Thry&prac-Shld**															
	08SU	8380	TBA	TBA	1	F	D	TR 103	25	25	8	7	7	100%	100% J. Mulcahy	XR	0.00	0.8	
	08FA	0451	S	8:00AM- 2:10PM	1	F	D	TR 103	35	25	0	1	1	100%	0% N. Schwarz	XN	0.00	0.1	
	08FA	0454	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.1	
	08FA	0457	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	2	2	2	100%	50% J. Mulcahy	XR	0.00	0.6	
	08FA	0663	TBA	TBA	1	F	D	TR 103	35	25	7	8	8	100%	88% J. Mulcahy	XR	0.00	1.2	
	09SP	4352	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	1	3	3	100%	67% J. Mulcahy	XR	0.00	0.3	
	09SP	4353	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.2	
	09SP	4360	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	6	5	4	80%	40% J. Mulcahy	XR	0.00	1.5	
	09SP	4363	TBA	TBA	1	F	D	TR 103	35	25	4	22	22	100%	64% J. Mulcahy	XR	0.00	2.7	
	09SP	4364	S	8:00AM-10:40AM	1	F	D	TR 103	35	25	0	0	0		N. Schwarz	XN	0.00	0.0	
	09SP	4366	S	8:00AM- 4:20PM	1	F	D	TR 103	35	25	1	3	2	67%	67% N. Schwarz	XN	0.00	0.9	
								11 Sections			31	53	51	96%	70%		0.00	8.4	
			38	**Wldg Thry&prac-Gas**															
	08SU	8383	TBA	TBA	1	F	D	TR 103	25	25	3	6	6	100%	100% J. Mulcahy	XR	0.00	0.7	
	08FA	0460	S	8:00AM-10:50AM	1	F	D	TR 103	35	25	1	2	2	100%	100% N. Schwarz	XN	0.00	0.2	
	08FA	0467	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.3	
	08FA	0660	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.2	
	08FA	0664	TBA	TBA	1	F	D	TR 103	35	25	8	16	16	100%	94% J. Mulcahy	XR	0.00	2.5	
	09SP	4355	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	2	5	5	100%	100% J. Mulcahy	XR	0.00	0.5	
	09SP	4369	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	0	2	2	100%	50% J. Mulcahy	XR	0.00	0.6	
	09SP	4372	TBA	TBA	1	F	D	TR 103	35	25	10	23	23	100%	87% J. Mulcahy	XR	0.00	3.2	
	09SP	4375	S	8:00AM-11:50AM	1	F	D	TR 103	35	25	0	0	0		N. Schwarz	XN	0.00	0.0	
								9 Sections			26	56	56	100%	91%		0.00	8.1	
WT			**39**	**Wldg Thry&prac-Gas**															
	08SU	8393	TBA	TBA	1	F	D	TR 103	35	25	4	3	3	100%	100% J. Mulcahy	XR	0.00	0.4	
	08FA	0470	S	8:00AM-10:50AM	1	F	D	TR 103	35	25	0	1	1	100%	100% N. Schwarz	XN	0.00	0.1	
	08FA	0477	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	2	1	1	100%	100% J. Mulcahy	XR	0.00	0.3	
	08FA	0649	S	8:00AM- 5:20PM	1	F	D	TR 103	35	25	1	1	1	100%	100% N. Schwarz	XN	0.00	0.3	
	08FA	0665	TBA	TBA	1	F	D	TR 103	35	25	7	8	8	100%	75% J. Mulcahy	XR	0.00	1.3	
	09SP	4359	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.2	
	09SP	4370	S	8:00AM-10:40AM	1	F	D	TR 103	35	25	0	2	2	100%	100% N. Schwarz	XN	0.00	0.2	
	09SP	4378	MW	1:00PM- 5:20PM	1	F	D	TR 103	35	25	3	3	1	33%	33% J. Mulcahy	XR	0.00	0.9	
	09SP	4381	TBA	TBA	1	F	D	TR 103	35	25	4	9	9	100%	78% J. Mulcahy	XR	0.00	1.5	
	09SP	4384	S	8:00AM-11:50AM	1	F	D	TR 103	35	25	1	2	2	100%	100% N. Schwarz	XN	0.00	0.6	
								10 Sections			23	31	29	94%	81%		0.00	5.8	
WT			**40**	**Oxyacetylene Welding**															
	08SU	8387	MTWThF	4:00PM- 9:07PM	1	F	D	TR 103	25	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.3	
	08FA	2035	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	2	1	0		E. Rulofson	FO	22.50	0.3	1.3
	09SP	4385	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	3	1	0	0%	0% E. Rulofson	FO	22.50	0.3	1.3
								3 Sections			6	3	1	50%	50%		45.00	0.9	2.0
WT			**41**	**Welding Technology**															
	08SU	8388	MTWThF	4:00PM- 9:07PM	1	F	D	TR 103	25	25	3	3	3	100%	100% J. Mulcahy	XR	0.00	0.9	
	08FA	0479	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	8	8	3	75%	75% E. Rulofson	XR	0.00	2.4	
	09SP	4386	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	1	1	1	100%	0% E. Rulofson	XR	0.00	0.3	
								3 Sections			12	12	7	88%	75%		0.00	3.6	
WT			**42**	**Intermediate Smaw**															
	08SU	8394	MTWThF	4:00PM- 9:07PM	1	F	D	TR 103	25	25	1	2	2	100%	100% J. Mulcahy	XR	0.00	0.6	
	08FA	0480	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	3	1	1	100%	0% E. Rulofson	XR	0.00	0.3	
	09SP	4387	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	1	1	1	100%	100% E. Rulofson	XR	0.00	0.3	
								3 Sections			5	4	4	100%	75%		0.00	1.2	
WT			**43**	**Advanced Smaw**															
	08FA	0481	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	2	2	2	100%	100% E. Rulofson	XR	0.00	0.6	
WT			**44**	**Gas Metal Arc Welding**															
	08SU	8391	MTWThF	4:00PM- 9:07PM	1	F	D	TR 103	25	25	2	2	2	100%	100% J. Mulcahy	XR	0.00	1.7	
	08FA	2039	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	2	5	5	100%	100% E. Rulofson	XR	0.00	1.5	
	09SP	4648	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	8	15	13	87%	53% E. Rulofson	XR	0.00	4.5	
								3 Sections			12	22	20	91%	68%		0.00	7.7	
WT			**45**	**Gas Tungsten Arc Welding**															
	08SU	8392	MTWThF	4:00PM- 9:07PM	1	F	D	TR 103	25	25	2	2	2	100%	100% J. Mulcahy	XR	0.00	0.6	
	08FA	2040	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	1	1	1	100%	100% E. Rulofson	XR	0.00	0.3	
	09SP	4390	MW	5:30PM- 9:50PM	1	F	E	TR 103	35	25	5	8	4	50%	25% E. Rulofson	XR	0.00	2.4	
								3 Sections			8	11	7	64%	45%		0.00	3.3	
Welding Technology Total								**65 Sections**			223	304	276	92%	73%		259.1	64.1	24.7
Welding Technology Total:								**67 Sections**			250	331	301	93%	72%		277	68	24.3

XL	Term	Syn	Days	Times	Loc	Mod	TOD	Room	Sec Cap	Rm Cap	Enrollments Start Date	Cen Date	End Date	Ret Rate	Succ Primary Rate Instructor	Pri TA	Load	FTES	FTES/ FTEF
Industrial Technology																			
			72	Facilities Maint. - Welding															
	09FA	0169	TTh	12:00PM- 3:45PM	1	F	D	TR 103	35	25	10	10	10	100%	90% J. Mulcahy	FO	15.00	1.9	12.9
	10SP	4265	TTh	12:00PM- 3:45PM	1	F	D	TR 103	35	25	8	10	7	78%	78% J. Mulcahy	FO	15.00	1.9	12.9
								2 Sections			18	20	17	89%	84%		30.00	3.9	12.9
Industrial Technology Total:								2 Sections			18	20	17	89%	84%		30.0	3.9	12.9
PGT - Power Generation Tech																			
PGT			22	Oper/Maintenc/Safty															
	09FA	0864	TTh	10:30AM-11:45AM	1	F	D	TR 103	35	25	13	13	11	92%	92% J. Mulcahy	FO	3.33	0.4	12.6
	10SP	4264	TTh	10:30AM-11:45AM	1	F	D	TR 103	35	25	7	6	5	100%	100% J. Mulcahy	FO	3.33	0.2	5.8
								2 Sections			20	19	16	94%	94%		6.66	0.6	9.2
Power Generation Tech Total:								2 Sections			20	19	16	94%	94%		6.7	0.6	9.2
WT - Welding Technology																			
WT			20	Power Plnt/Fld Pipe															
	09FA	0432	T	5:00PM- 5:50PM	1	F	E	TR 103	35	25	15	16	16	100%	63% J. Mulcahy	FR	18.33	3.7	20.4
	10SP	4345	T	5:00PM- 5:50PM	1	F	E	TR 103	35	25	4	7	5	71%	71% J. Mulcahy	FR	18.33	1.6	8.9
								2 Sections			19	23	21	91%	65%		36.66	5.4	14.6
WT			21	Power Plnt/Fld Pipe															
	09FA	0433	Th	5:00PM- 5:50PM	1	F	E	TR 103	35	25	3	3	1	33%	0% J. Mulcahy	FR	3.33	0.7	21.0
	10SP	4346	Th	5:00PM- 5:50PM	1	F	E	TR 103	35	25	7	9	8	89%	89% J. Mulcahy	FR	3.33	2.1	63.1
								2 Sections			10	12	9	75%	67%		6.66	2.8	42.0
WT			22	Power Plnt/Fld Pipe															
	09FA	0434	T	4:00PM- 4:50PM	1	F	E	TR 103	35	25	3	4	4	100%	75% J. Mulcahy	FR	3.33	0.9	28.0
	10SP	4347	T	4:00PM- 4:50PM	1	F	E	TR 103	35	25	2	3	3	100%	67% J. Mulcahy	FR	3.33	0.7	21.0
								2 Sections			5	7	7	100%	71%		6.66	1.6	24.5
WT			23	Power Plnt/Fld Pipe															
	09FA	0596	Th	4:00PM- 4:50PM	1	F	E	TR 103	35	25	3	3	3	100%	100% J. Mulcahy	FR	3.33	0.7	21.0
	10SP	4348	Th	4:00PM- 4:50PM	1	F	E	TR 103	35	25	2	1	1	100%	100% J. Mulcahy	FR	3.33	0.2	7.0
								2 Sections			5	4	4	100%	100%		6.66	0.9	14.0
WT			36	Wldg Thry&prac-Oxy															
	09SU	8377	TBA	TBA	1	F	D	TR 103	35	25	2	1	1	100%	0% J. Mulcahy	FO	22.50	0.0	0.0
	09FA	0444	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	0	0	0		J. Mulcahy	XR	0.00	0.0	
	09FA	0662	TBA	TBA	1	F	D	TR 103	35	25	11	12	12	100%	67% J. Mulcahy	FR	22.50	1.7	7.6
	09FA	2001	MW	1:00PM- 5:28PM	1	F	D	TR 103	35	25	6	6	5	83%	50% J. Mulcahy	FO	22.50	1.8	8.0
	10SP	4351	MW	12:55PM- 5:20PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	FO	22.50	0.3	1.3
	10SP	4894	TBA	TBA	1	F	D	TR 103	35	25	7	10	10	100%	90% J. Mulcahy	FR	22.50	1.7	7.6
								6 Sections			27	30	29	97%	70%		112.50	5.5	4.9
WT			37	Wldg Thry&prac-Shld															
	09SU	8380	TBA	TBA	1	F	D	TR 103	35	25	13	13	13	100%	85% J. Mulcahy	XR	0.00	1.7	
	09FA	0454	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	1	0	0		J. Mulcahy	XR	0.00	0.0	
	09FA	0457	MW	1:00PM- 5:28PM	1	F	D	TR 103	35	25	4	8	8	100%	63% J. Mulcahy	XR	0.00	2.4	
	09FA	0659	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.2	
	09FA	0663	TBA	TBA	1	F	D	TR 103	35	25	14	16	16	100%	81% J. Mulcahy	XR	19.26	2.3	11.8
	10SP	4352	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	1	2	2	100%	100% J. Mulcahy	XR	0.00	0.2	
	10SP	4353	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	2	3	2	67%	67% J. Mulcahy	XR	0.00	0.6	
	10SP	4363	TBA	TBA	1	F	D	TR 103	35	25	8	8	8	100%	75% J. Mulcahy	XR	0.00	0.8	
								8 Sections			44	51	50	98%	78%		19.26	8.2	42.7
			38	Wldg Thry&prac-Gas															
	09SU	8383	TBA	TBA	1	F	D	TR 103	35	25	14	19	19	100%	84% J. Mulcahy	XR	0.00	2.3	
	09FA	0464	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	0	1	1	100%	100% J. Mulcahy	XR	0.00	0.1	
	09FA	0467	MW	1:00PM- 5:28PM	1	F	D	TR 103	35	25	1	3	3	100%	33% J. Mulcahy	XR	0.00	0.9	
	09FA	0660	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	0	1	0	0%	0% J. Mulcahy	XR	0.00	0.2	
	09FA	0664	TBA	TBA	1	F	D	TR 103	40	25	14	30	30	100%	87% J. Mulcahy	XR	0.00	5.6	
	10SP	4356	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.2	
	10SP	4369	MW	12:55PM- 5:20PM	1	F	D	TR 103	35	25	3	3	2	67%	33% J. Mulcahy	XR	0.00	0.9	
	10SP	4372	TBA	TBA	1	F	D	TR 103	35	25	6	9	9	100%	89% J. Mulcahy	XR	0.00	1.3	
								8 Sections			39	67	65	97%	81%		0.00	11.5	
WT			39	Wldg Thry&prac-Gas															
	09SU	8393	TBA	TBA	1	F	D	TR 103	35	25	4	3	3	100%	100% J. Mulcahy	XR	0.00	0.4	
	09FA	0477	MW	1:00PM- 5:28PM	1	F	D	TR 103	35	25	4	4	4	100%	100% J. Mulcahy	XR	0.00	1.2	
	09FA	0665	TBA	TBA	1	F	D	TR 103	35	25	5	6	6	100%	50% J. Mulcahy	XR	0.00	0.8	
	10SP	4378	MW	12:55PM- 5:20PM	1	F	D	TR 103	35	25	2	1	1	100%	100% J. Mulcahy	XR	0.00	0.3	
	10SP	4381	TBA	TBA	1	F	D	TR 103	35	25	5	4	4	100%	100% K. Konkol	FN	22.50	0.5	2.2
								5 Sections			20	18	18	100%	83%		22.50	3.2	14.3
WT			40	Oxyacetylene Welding															
	09FA	2035	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	3	5	2	40%	40% E. Rulofson	FO	22.50	1.5	6.7
	10SP	4385	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	1	1	1	100%	100% E. Rulofson	FO	22.50	0.3	1.3
								2 Sections			4	6	3	50%	50%		45.00	1.8	4.0
WT			41	Welding Technology															
	09SU	8388	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	35	25	4	4	4	100%	75% J. Mulcahy	XR	0.00	1.2	
	09FA	0479	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	4	4	3	75%	50% E. Rulofson	XR	0.00	1.2	
	10SP	4386	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	6	7	7	100%	100% E. Rulofson	XR	0.00	2.1	
								3 Sections			14	15	14	93%	80%		0.00	4.5	
WT			42	Intermediate Smaw															
	09FA	0480	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	2	2	0	0%	0% E. Rulofson	XR	0.00	0.6	
	10SP	4387	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	4	4	4	100%	100% E. Rulofson	XR	0.00	1.2	
								2 Sections			6	6	4	67%	67%		0.00	1.8	
WT			43	Advanced Smaw															
	09SU	8390	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	35	25	0	1	1	100%	100% J. Mulcahy	XR	0.00	0.3	
	09FA	0481	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	1	1	1	100%	100% E. Rulofson	XR	0.00	0.3	
	10SP	4388	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	2	2	2	100%	100% E. Rulofson	XR	0.00	0.6	
								3 Sections			3	4	4	100%	100%		0.00	1.2	
WT			44	Gas Metal Arc Welding															
	09SU	8391	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	35	25	3	3	3	100%	33% J. Mulcahy	XR	0.00	0.9	
	09FA	0482	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	2	2	2	100%	100% E. Rulofson	XR	0.00	0.6	
	10SP	4648	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	2	3	2	67%	67% E. Rulofson	XR	0.00	0.9	
								3 Sections			7	8	7	88%	63%		0.00	2.4	
WT			45	Gas Tungsten Arc Welding															
	09SU	8392	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	35	25	1	1	1	100%	100% J. Mulcahy	XR	0.00	0.3	
	09FA	2040	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	5	4	1	25%	25% E. Rulofson	XR	0.00	1.2	
	10SP	4390	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	2	3	2	67%	67% E. Rulofson	XR	0.00	0.9	
								3 Sections			8	8	4	50%	50%		0.00	2.4	
Welding Technology Total:								51 Sections			211	259	239	92%	75%		255.9	53.1	20.8
Welding Technology Total:								55 Sections			249	298	272	92%	77%		293	58	19.7

XL	Term	Syn	Days	Times	Loc	Mod	TOD	Room	Sec Cap	Rm Cap	Enrollments Start Date	Cen Date	End Date	Ret Rate	Succ Rate	Primary Instructor	Pri TA	Load	FTES	FTES/ FTEF
Industrial Technology																				
			72	**Facilities Maint. - Welding**																
	10SU	5009	MTWTh	4:00PM- 8:15PM	1	F	D	TR 103	35	25	2	4	6	100%	100%	E. Rulofson	FI	15.00	0.8	5.3
	10FA	0169	TTh	12:00PM- 3:20PM	1	F	D	TR 103	35	25	9	10	8	89%	78%	K. Konkol	FR	15.00	1.9	12.8
	11SP	4265	TTh	12:00PM- 2:50PM	1	F	D	TR 103	35	25	17	23	18	82%	41%	K. Konkol	FR	15.00	4.6	30.7
								3 Sections			28	37	32	86%	59%			45.00	7.3	16.2
Industrial Technology Total:								3 Sections			28	37	32	86%	59%			45.0	7.3	16.2
PGT - Power Generation Tech																				
PGT			22	**Oper/Maintenc/Safty**																
	10FA	0864	TTh	10:30AM-11:45AM	1	F	D	TR 103	35	25	5	5	5	100%	80%	K. Konkol	FR	3.33	0.1	4.3
	11SP	4264	TTh	10:30AM-11:38AM	1	F	D	TR 103	35	25	12	12	12	100%	67%	K. Konkol	FR	3.33	0.4	12.1
								2 Sections			17	17	17	100%	71%			6.66	0.5	8.2
Power Generation Tech Total:								2 Sections			17	17	17	100%	71%			6.7	0.5	8.2
WT - Welding Technology																				
WT			20	**Power Plnt/Fld Pipe**																
	10FA	0432	T	5:00PM- 5:50PM	1	F	E	TR 103	35	25	6	12	9	82%	82%	K. Konkol	FR	18.33	2.8	15.3
	11SP	4345	T	5:00PM- 5:50PM	1	F	E	TR 103	35	25	14	17	14	88%	44%	K. Konkol	FR	18.33	4.0	21.6
								2 Sections			20	29	23	85%	59%			36.66	6.8	18.5
WT			21	**Power Plnt/Fld Pipe**																
	10FA	0433	Th	5:00PM- 5:50PM	1	F	E	TR 103	35	25	0	1	1	100%	100%	K. Konkol	FR	3.33	0.2	7.0
	11SP	4346	Th	5:00PM- 5:50PM	1	F	E	TR 103	35	25	6	8	6	86%	57%	K. Konkol	FR	3.33	1.9	56.1
								2 Sections			6	9	7	88%	63%			6.66	2.1	31.5
WT			22	**Power Plnt/Fld Pipe**																
	10FA	0434	T	4:00PM- 4:50PM	1	F	E	TR 103	35	25	1	1	1	100%	100%	K. Konkol	FR	3.33	0.2	7.0
	11SP	4347	T	4:00PM- 4:50PM	1	F	E	TR 103	35	25	2	2	1	50%	50%	K. Konkol	FR	3.33	0.5	14.0
								2 Sections			3	3	2	67%	67%			6.66	0.7	10.5
WT			23	**Power Plnt/Fld Pipe**																
	10FA	0596	Th	4:00PM- 4:50PM	1	F	E	TR 103	35	25	3	4	4	100%	100%	K. Konkol	FR	3.33	0.9	28.0
WT			36	**Wldg Thry&prac-Oxy**																
P	10SU	8377	TBA	TBA	1	F	D	TR 103	15	25	2	1	1	100%	100%	K. Konkol	FI	22.50	0.1	1.6
	10FA	0444	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	2	1	1	100%	100%	K. Konkol	XR	0.00	0.1	
	10FA	0658	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	2	0	0			K. Konkol	XR	0.00	0.0	
	10FA	0662	TBA	TBA	1	F	D	TR 103	35	25	3	2	2	100%	50%	K. Konkol	FR	22.50	0.3	1.2
	10FA	2001	MW	1:00PM- 5:28PM	1	F	D	TR 103	35	25	3	5	5	100%	100%	K. Konkol	FO	22.50	0.7	3.1
	11SP	4349	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	1	1	1	100%	100%	K. Konkol	XR	0.00	0.1	
	11SP	4351	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	2	2	2	100%	100%	K. Konkol	XR	0.00	0.3	
	11SP	4373	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	16	11	11	100%	73%	K. Konkol	FO	22.50	1.2	5.4
	11SP	4894	TBA	TBA	1	F	D	TR 103	35	25	9	9	9	100%	56%	K. Konkol	XR	0.00	0.9	
								9 Sections			40	32	32	100%	75%			90.00	3.7	4.4
WT			37	**Wldg Thry&prac-Shld**																
	10FA	0454	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	1	1	1	100%	100%	K. Konkol	XR	0.00	0.1	
	10FA	0659	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	1	1	100%	100%	K. Konkol	XR	0.00	0.1	
	10FA	0778	TBA	TBA	1	F	D	TR 103	35	25	0	1	1	100%	100%	K. Konkol	XR	0.00	0.1	
	11SP	4352	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	0	1	1	100%	0%	K. Konkol	XR	0.00	0.1	
	11SP	4353	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	1	1	1	100%	100%	K. Konkol	XR	0.00	0.2	
	11SP	4360	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	4	3	3	100%	100%	K. Konkol	XR	0.00	0.4	
	11SP	4363	TBA	TBA	1	F	D	TR 103	35	25	15	15	15	100%	53%	K. Konkol	XR	0.00	1.6	
								7 Sections			22	23	23	100%	65%			0.00	2.6	
WT			38	**Wldg Thry&prac-Gas**																
S	10SU	8383	TBA	TBA	1	F	D	TR 103	10	25	1	3	3	100%	100%	K. Konkol	XN	0.00	0.3	
	10FA	0467	MW	1:00PM- 5:28PM	1	F	D	TR 103	35	25	0	2	2	100%	100%	K. Konkol	XR	0.00	0.2	
	10FA	0664	TBA	TBA	1	F	D	TR 103	35	25	1	5	5	100%	60%	K. Konkol	XR	0.00	0.3	
	11SP	4369	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	1	1	1	100%	100%	K. Konkol	XR	0.00	0.2	
	11SP	4372	TBA	TBA	1	F	D	TR 103	35	25	6	11	11	100%	55%	K. Konkol	XR	0.00	0.9	
								5 Sections			9	22	22	100%	68%			0.00	1.8	
WT			39	**Wldg Thry&prac-Gas**																
	10FA	0477	MW	1:00PM- 5:28PM	1	F	D	TR 103	35	25	2	3	3	100%	67%	K. Konkol	XR	0.00	0.3	
	10FA	0665	TBA	TBA	1	F	D	TR 103	35	25	2	4	4	100%	75%	K. Konkol	XR	0.00	0.2	
	11SP	4377	MW	1:00PM- 2:20PM	1	F	D	TR 103	35	25	0	1	1	100%	100%	K. Konkol	XR	0.00	0.1	
	11SP	4378	MW	1:00PM- 3:50PM	1	F	D	TR 103	35	25	0	1	1	100%	0%	K. Konkol	XR	0.00	0.0	
	11SP	4379	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	2	3	3	100%	100%	K. Konkol	XR	0.00	0.6	
	11SP	4381	TBA	TBA	1	F	D	TR 103	35	25	3	4	4	100%	100%	K. Konkol	XR	0.00	0.6	
								6 Sections			9	16	16	100%	81%			0.00	1.9	
WT			40	**Oxyacetylene Welding**																
P	10FA	2035	MW	5:30PM- 9:55PM	1	F	E	TR 103	10	25	4	6	3	60%	40%	E. Rulofson	FO	22.50	1.8	21.3
	11SP	4385	MW	5:30PM- 9:55PM	1	F	E	TR 103	8	25	3	4	3	75%	75%	E. Rulofson	FO	22.50	1.2	5.3
								2 Sections			7	10	6	67%	56%			45.00	3.0	13.3
WT			41	**Welding Technology**																
	10SU	8388	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	10	25	4	2	2	100%	100%	K. Konkol	XR	0.00	0.6	
S	10FA	0479	MW	5:30PM- 9:55PM	1	F	E	TR 103	10	25	0	1	0	0%	0%	E. Rulofson	XR	0.00	0.3	
								2 Sections			4	3	2	67%	67%			0.00	0.9	
WT			42	**Intermediate Smaw**																
	10SU	8394	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	10	25	1	1	1	100%	100%	K. Konkol	XN	0.00	0.3	
S	10FA	0480	MW	5:30PM- 9:55PM	1	F	E	TR 103	10	25	1	1	1	100%	100%	E. Rulofson	XR	0.00	0.3	
								2 Sections			2	2	2	100%	100%			0.00	0.6	
WT			43	**Advanced Smaw**																
	10SU	8390	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	10	25	1	1	1	100%	100%	K. Konkol	XN	0.00	0.3	
S	10FA	0481	MW	5:30PM- 9:55PM	1	F	E	TR 103	10	25	1	1	1	100%	100%	E. Rulofson	XR	0.00	0.3	
								2 Sections			2	2	2	100%	100%			0.00	0.6	
WT			44	**Gas Metal Arc Welding**																
	10SU	8391	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	10	25	1	1	1	100%	100%	K. Konkol	XN	0.00	0.3	
S	10FA	0482	MW	5:30PM- 9:55PM	1	F	E	TR 103	10	25	1	3	3	100%	100%	E. Rulofson	XR	0.00	0.9	
	11SP	4648	MW	5:30PM- 9:55PM	1	F	E	TR 103	5	25	3	4	4	100%	100%	E. Rulofson	XR	0.00	1.2	
								3 Sections			5	8	8	100%	100%			0.00	2.4	
WT			45	**Gas Tungsten Arc Welding**																
	10SU	8392	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	10	25	2	2	2	100%	100%	K. Konkol	XN	0.00	0.6	
S	10FA	2040	MW	5:30PM- 9:55PM	1	F	E	TR 103	10	25	2	4	2	100%	100%	E. Rulofson	XR	0.00	1.2	
	11SP	4390	MW	5:30PM- 9:55PM	1	F	E	TR 103	8	25	6	7	6	86%	71%	E. Rulofson	XR	0.00	2.1	
								3 Sections			10	13	10	91%	82%			0.00	3.9	
Welding Technology Total:								48 Sections			142	176	159	94%	72%			188.3	31.9	17.0
Welding Technology Total:								53 Sections			187	230	208	93%	70%			240	40	16.6

XL	Term	Syn	Days	Times	Loc	Mod	TOD	Room	Sec Cap	Rm Cap	Enrollments Start Date	Cen Date	End Date	Ret Rate	Succ Primary Rate Instructor	Pri TA	Load	FTES	FTES/ FTEF
ndustrial Technology																			
			22	**Oper/Main/Sfty**															
	12SP	4723	TTh	9:45AM-10:50AM	1	F	D	TR 103	24	25	6	4	4	100%	25% K. Konkol	FR	3.33	0.1	3.9
IT			**72**	**Facilities Maint. - Welding**															
	11SU	5009	MTWTh	5:00PM- 9:15PM	1	F	E	TR 103	25	25	5	4	4	100%	100% E. Rulofson	FO	15.00	0.8	5.3
	11FA	0169	TTh	12:00PM- 2:50PM	1	F	D	TR 103	25	25	5	10	9	100%	78% K. Konkol	FO	15.00	2.0	13.3
	12SP	4265	TTh	12:00PM- 2:50PM	1	F	D	TR 103	35	25	6	10	7	78%	44% K. Konkol	FR	15.00	2.0	13.3
								3 Sections			16	24	20	91%	68%		45.00	4.8	10.6
Industrial Technology Total:								4 Sections			22	28	24	92%	62%		48.3	4.9	10.2
PGT - Power Generation Tech																			
PGT			**22**	**Oper/Maintenc/Safty**															
	11FA	0864	TTh	10:00AM-11:15AM	1	F	D	TR 103	25	25	8	8	8	100%	63% K. Konkol	FR	3.33	0.3	8.2
Power Generation Tech Total:								1 Section			8	8	8	100%	63%		3.3	0.3	8.2
WT - Welding Technology																			
WT			**20**	**Power Plnt/Fld Pipe**															
	11FA	0432	T	5:00PM- 5:50PM	1	F	E	TR 103	25	25	9	10	8	89%	56% K. Konkol	FR	18.33	2.3	12.7
	12SP	4345	T	5:00PM- 5:50PM	1	F	E	TR 103	35	25	14	16	9	60%	13% K. Konkol	FR	18.33	3.7	20.4
								2 Sections			23	26	17	71%	29%		36.66	6.1	16.5
WT			**21**	**Power Plnt/Fld Pipe**															
	11FA	0433	Th	5:00PM- 5:50PM	1	F	E	TR 103	25	25	5	5	5	100%	20% K. Konkol	FR	3.33	1.2	35.0
	12SP	4346	Th	5:00PM- 5:50PM	1	F	E	TR 103	35	25	11	9	9	100%	33% K. Konkol	FR	3.33	2.1	63.1
								2 Sections			16	14	14	100%	29%		6.66	3.3	49.0
WT			**22**	**Power Plnt/Fld Pipe**															
	11FA	0434	T	4:00PM- 4:50PM	1	F	E	TR 103	25	25	3	3	3	100%	100% K. Konkol	FR	3.33	0.7	21.0
	12SP	4347	T	4:00PM- 4:50PM	1	F	E	TR 103	35	25	3	2	2	100%	50% K. Konkol	FR	3.33	0.5	14.0
								2 Sections			6	5	5	100%	80%		6.66	1.2	17.5
WT			**23**	**Power Plnt/Fld Pipe**															
	12SP	4348	Th	4:00PM- 4:50PM	1	F	E	TR 103	35	25	3	3	3	100%	33% K. Konkol	FR	3.33	0.7	21.0
WT			**36**	**Wldg Thry&prac-Oxy**															
P	11SU	8377	TBA	TBA	1	F	D	TR 103	10	25	1	1	1	100%	0% K. Konkol	FO	22.50	0.1	8.3
	11FA	0662	TBA	TBA	1	F	D	TR 103	25	25	6	10	10	100%	90% K. Konkol	XR	0.00	1.1	
	11FA	2001	MW	1:00PM- 5:28PM	1	F	D	TR 103	25	25	4	3	3	100%	67% K. Konkol	FR	22.50	0.4	1.8
	12SP	4373	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	2	2	2	100%	50% K. Konkol	FO	22.50	0.1	0.4
	12SP	4894	TBA	TBA	1	F	D	TR 103	35	25	9	13	13	100%	23% K. Konkol	XR	0.00	0.5	
								5 Sections			22	29	29	100%	52%		67.50	2.2	5.8
WT			**37**	**Wldg Thry&prac-Shld**															
S	11SU	8380	TBA	TBA	1	F	D	TR 103	10	25	7	5	5	100%	40% K. Konkol	XR	0.00	0.4	
	11FA	0659	MW	1:00PM- 5:28PM	1	F	D	TR 103	25	25	4	5	5	100%	20% K. Konkol	XR	0.00	0.6	
	11FA	0778	TBA	TBA	1	F	D	TR 103	25	25	4	7	7	100%	43% K. Konkol	XR	0.00	0.8	
	12SP	4360	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	4	5	5	100%	100% K. Konkol	XR	0.00	0.5	
	12SP	4363	TBA	TBA	1	F	D	TR 103	35	25	13	15	15	100%	40% K. Konkol	XR	0.00	1.0	
								5 Sections			32	37	37	100%	46%		0.00	3.2	
WT			**38**	**Wldg Thry&prac-Gas**															
S	11SU	8383	TBA	TBA	1	F	D	TR 103	10	25	2	8	8	100%	88% K. Konkol	XR	0.00	0.7	
	11FA	0467	MW	1:00PM- 5:28PM	1	F	D	TR 103	25	25	2	2	2	100%	100% K. Konkol	XR	0.00	0.3	
	11FA	0664	TBA	TBA	1	F	D	TR 103	25	25	9	13	13	100%	77% K. Konkol	XR	0.00	1.6	
	12SP	4369	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	7	5	5	100%	60% K. Konkol	XR	0.00	0.4	
	12SP	4372	TBA	TBA	1	F	D	TR 103	35	25	12	17	17	100%	76% K. Konkol	XR	0.00	1.4	
								5 Sections			32	45	45	100%	78%		0.00	4.4	
WT			**39**	**Wldg Thry&prac-Gas**															
S	11SU	8393	TBA	TBA	1	F	D	TR 103	10	25	0	2	2	100%	50% K. Konkol	XR	0.00	0.1	
	11FA	0477	MW	1:00PM- 5:28PM	1	F	D	TR 103	25	25	2	2	2	100%	100% K. Konkol	XR	0.00	0.3	
	11FA	0665	TBA	TBA	1	F	D	TR 103	25	25	3	7	7	100%	71% K. Konkol	XR	0.00	0.8	
	12SP	4379	MW	1:00PM- 5:25PM	1	F	D	TR 103	35	25	2	1	1	100%	100% K. Konkol	XR	0.00	0.2	
	12SP	4381	TBA	TBA	1	F	D	TR 103	35	25	13	12	12	100%	42% K. Konkol	XR	0.00	0.9	
								5 Sections			20	24	24	100%	58%		0.00	2.4	
WT			**40**	**Oxyacetylene Welding**															
S	11SU	8387	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	10	25	1	1	1	100%	0% K. Konkol	XR	0.00	0.3	
P	11FA	2035	MW	5:30PM- 9:55PM	1	F	E	TR 103	25	25	2	2	2	100%	50% E. Rulofson	FO	22.50	0.6	12.0
	12SP	3920	TBA	TBA	1	F	D	TR 103	35	25	1	1	1	100%	0% E. Rulofson	XR	0.00	0.1	
	12SP	4385	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	8	7	4	57%	43% E. Rulofson	FO	22.50	2.1	9.3
								4 Sections			12	11	8	73%	36%		45.00	3.1	10.8
WT			**42**	**Intermediate Smaw**															
S	11SU	8394	MTWThF	4:00PM- 9:05PM	1	F	D	TR 103	10	25	1	1	1	100%	0% K. Konkol	XR	0.00	0.3	
S	11FA	0480	MW	5:30PM- 9:55PM	1	F	E	TR 103	25	25	1	1	1	100%	100% E. Rulofson	XR	0.00	0.3	
	12SP	4387	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	3	3	2	67%	67% E. Rulofson	XR	0.00	0.9	
								3 Sections			5	5	4	80%	60%		0.00	1.5	
WT			**43**	**Advanced Smaw**															
S	11FA	0481	MW	5:30PM- 9:55PM	1	F	E	TR 103	25	25	0	1	1	100%	100% E. Rulofson	XR	0.00	0.3	
WT			**44**	**Gas Metal Arc Welding**															
S	11FA	0482	MW	5:30PM- 9:55PM	1	F	E	TR 103	25	25	1	2	2	100%	50% E. Rulofson	XR	0.00	0.6	
	12SP	3923	TBA	TBA	1	F	D	TR 103	35	25	2	2	2	100%	50% E. Rulofson	XR	0.00	0.2	
	12SP	4648	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	2	2	2	100%	100% E. Rulofson	XR	0.00	0.6	
								3 Sections			5	6	6	100%	67%		0.00	1.4	
WT			**45**	**Gas Tungsten Arc Welding**															
S	11FA	2040	MW	5:30PM- 9:55PM	1	F	E	TR 103	25	25	3	3	3	100%	33% E. Rulofson	XR	0.00	0.9	
	12SP	3924	TBA	TBA	1	F	D	TR 103	35	25	0	0	0		E. Rulofson	XR	0.00	0.0	
	12SP	4390	MW	5:30PM- 9:55PM	1	F	E	TR 103	35	25	2	2	2	100%	50% E. Rulofson	XR	0.00	0.6	
								3 Sections			5	5	5	100%	40%		0.00	1.5	
Welding Technology Total:								41 Sections			181	211	198	94%	53%		165.8	31.0	18.7
Welding Technology Total:								**46 Sections**			**211**	**247**	**230**	**95%**	**54%**		**217**	**36**	**16.6**

Appendix:

F

Contract Agreement Form

Welding Technology Program

Contract Agreement and Release Form

The Welding Technology program can prepare you as a student for the rigors of higher education or on-the-job training in the field. As a LCC student you understand and agree that the welding technology field is demanding, requires self-motivation, and the desire to achieve. The only limiting factor in this profession is you.

By signing below you agree to complete the required performance objectives and hours necessary to successfully pass the welding course(s) you enrolled in. Ultimately, your skill level will determine how fast the performance objectives are completed. The number of hours spent working in the shop directly correlates to the successful completion of your performance objectives. Meaning, if you don't show up, your work won't get done. Below is a list of varying unit(s) and their required hours per week for the following classes: WT-36-39 and WT-40-45. Last of all, should you fail to show up to class on a regular basis without contacting the instructor, you should expect to be dropped.

1 unit = 3 hours per week for 17 weeks – Total 51 hours
2 units = 6 hours per week for 17 weeks – Total 102 hours
3 units = 9 hours per week for 17 weeks – Total 153 hours

☐ By checking this box I agree to allow LCC the right to utilize my photo and/or created projects/artwork of any kind for promotion of the Welding Technology program and/or any other LCC department/event.

By signing below, you are agreeing to the terms and conditions outlined above.

Signature _____ Date _____

Print _____

LCC wishes to maintain a networking connection with you throughout your educational and career development. Please include a valid contact number and inform us by email of any future changes to your contact information at kkonkol@lassencollege.edu or by phone 530 (251-8887)

_____
Mailing Address

_____ _____ _____
City State Zip Code

_____ _____
Email Phone

_____
Facebook

LCC reserves the right to select photos and or work appropriate to the promotion. Some editing may occur.

Appendix:

G

Student Learning Outcome Assessment Results

Detailed Assessment Report
2012-2013 WT 20-Power Plant & Field Pipe Welding I

As of: 10/22/2013 11:18 AM PDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 20-SLO 1
Safely set-up and perform a minimum of ten straight line cuts, seven inches long on 3/8" steel using oxyacetylene cutting equipment.

Related Measures

M 1: WT20-FA12-kkonkol
Activity 1: Safe setup of oxyacetylene equipment Assessment Method: Instructor evaluation - proper setup of oxyacetylene torches. Activity 2: Perform 10 straight cuts, seven inches long on 3/8" steel with oxyacetylene Assessment Method: Instructor evaluation based on: completeness of cut, straightness, excess dross, quality of cut.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity 1: Criteria: 80% will safely set-up torches properly for cutting. Activity 2: Criteria: 80% will meet the standards outlined.

Finding (2012-2013) - Target: Met
100% of the 71.4% of students that participated successfully set up the torches and met the cutting standards.

M 2: WT20-SP13-kkonkol
Activity 1: Safe setup of oxyacetylene equipment Assessment Method: Instructor evaluation - proper setup of oxyacetylene torches. Activity 2: Perform 10 straight cuts, seven inches long on 3/8" steel with oxyacetylene Assessment Method: Instructor evaluation based on: completeness of cut, straightness, excess dross, quality of cut.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity 1: Criteria: 80% will safely set-up torches properly for cutting. Activity 2: Criteria: 80% will meet the standards outlined.

Finding (2012-2013) - Target: Met
100% or seven out of seven students met the criteria for activity one and two.

SLO 2: WT 20-SLO 2
Safely setup and perform gouging, cutting, and piercing on 3/8" ferrous metals using carbon arc cutting equipment.

SLO 3: WT 20-SLO 3
Apply E6011-1/8" and E7018-1/8" electrodes on 3/8" plate and 6" schedule 80 pipe joint designs, using shielded metal arc welding equipment, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

SLO 4: WT 20-SLO 4
Complete a 3/8" - 1G plate and a 6" schedule 80 - 2G pipe certification, using shielded metal arc welding, which meets or exceeds the American Welding Society D1.1 Structural Welding Code Standards.

Detailed Assessment Report
2012-2013 WT 21-Power Plant & Field Pipe Welding II

As of: 10/22/2013 11:18 AM PDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 21-SLO 1
Apply E6011-5/32" and E7018-5/32" electrodes, right handed and left handed on 3/8" plate joint designs, using the shielded metal arc welding equipment, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

Related Measures

M 1: WT21-FA12-kkonkol
Approach: All students enrolled in WT 21 will be evaluated on SLO#1 as follows: Activity: Perform 10 passes right handed and 10 passes left handed with E6011-5/32". Assessment Method: Instructor evaluation for acceptable: length, width, ripple form, penetration, and fusion.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Criteria: 100% will meet D1.1 Structural Welding Code standards.

Finding (2012-2013) - Target: Not Reported This Cycle
Lack of enrollment for this class (Fall 2012) resulted in no measurable data.

M 2: WT21-SP13-kkonkol
Approach: All students enrolled in WT 21 will be evaluated on SLO#1 as follows: Activity: Perform 10 passes right handed and 10 passes left handed with E6011-5/32". Assessment Method: Instructor evaluation for acceptable: length, width, ripple form, penetration, and fusion.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Approach: All students enrolled in WT 21 will be evaluated on SLO#1 as follows: Activity: Perform 10 passes right handed and 10 passes left handed with E6011-5/32". Assessment Method: Instructor evaluation for acceptable: length, width, ripple form, penetration, and fusion. [Preview Formatting]

Finding (2012-2013) - Target: Partially Met
75% of the students or 3 three out of four students completed the activity. 100% wasn't achieved due to lack of attendance by the fourth student. No changes necessary.

SLO 2: WT 21-SLO 2
Apply E6011-5/32" and E7018-5/32" electrodes on 3/8" plate joint designs using AC polarity, with the shielded metal arc welding equipment.

SLO 3: WT 21-SLO 3
Apply ER70S fill rod to six joint designs, using the gas tungsten arc welding process on 16g hot rolled steel.

SLO 4: WT 21-SLO 4
Complete three (3) 2G and three (3) 5G pipe joints using the shielded metal arc welding equipment on 6" schedule 80 pipe, which meets or exceeds the American Welding Society D1.1Structural Welding Code standards.

SLO 5: WT 21-SLO 5
Complete a 1" – 3G and a 1" - 4G American Welding Society certification using the shielded metal arc welding process.

Detailed Assessment Report
2012-2013 WT 22-Power Plant & Field Pipe Welding III
As of: 10/22/2013 11:18 AM PDT
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 22-SLO 1
Apply E7024-5/32" and ER308-16 – 1/8" electrodes to 3/8" plate joint designs, using the shielded metal arc welding equipment.

Related Measures

M 2: WT22-SP13-kkonkol
Activity: Perform a minimum of 10 passes to each of nine joint designs. Assessment Method: Instructor evaluation for acceptable: length, width, ripple form, penetration, and fusion.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity: Perform a minimum of 10 passes to each of nine joint designs. Assessment Method: Instructor evaluation for acceptable: length, width, ripple form, penetration, and fusion.

Finding (2012-2013) - Target: Met
100% met the activity. No changes necessary.

SLO 2: WT 22-SLO 2
Apply ER70S to nine joint designs, using the gas tungsten arc welding process, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

Related Measures

M 1: WT22-FA12-kkonkol
Activity: Perform a minimum of 10 passes to each of nine joint designs. Assessment Method: Instructor evaluation for acceptable: length, width, ripple form, penetration, and fusion.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Criteria: 8 of 10 passes, for each joint design, will meet or exceed industry standards.

Finding (2012-2013) - Target: Met
Ten out of ten passes for the nine joint designs were met, by 50% of the students (two total).

SLO 3: WT 22-SLO 3
Complete six (6) 6G pipe joints, using the shielded metal arc welding equipment on 6" schedule 80 pipe, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

SLO 4: WT 22-SLO 4
Apply the gas metal arc and flux-cored arc welding processes to joint designs, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

SLO 5: WT 22-SLO 5
Complete gas tungsten arc, gas metal arc, and flux cored arc welding certifications, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

Detailed Assessment Report
2012-2013 WT 23-Power Plant & Field Pipe Welding IV
As of: 10/22/2013 11:18 AM PDT
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 23-SLO 1
Complete five (5) 5G and five (5) 2G pipe joints, using the gas tungsten arc and shielded metal arc welding processes on 6" schedule 80 pipe.

Related Measures

M 1: WT23-FA12-kkonkol
Activity: Complete five – 5G pipe joints using gas tungsten arc and shielded metal arc welding processes. Activity: Complete five – 2G pipe joints using gas tungsten arc and shielded metal arc welding processes. Assessment Method: Instructor evaluation via visual and/or side bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Criteria: 3 of 5 pipe joints (5g & 2g) will meet or exceed American Welding Society D1.1 Structural Welding Code standards.

Finding (2012-2013) - Target: Partially Met
Criteria for the 2g pipe joint was met while the criteria for the 5g pipe needs improvement. (Based on one student enrolled)

Related Action Plans (by Established cycle, then alpha):

For full information, see the *Details of Action Plans* section of this report.

WT23-FA12-AP-kkonkol
Established in Cycle: 2012-2013
Increase number of practice coupons for the 5g pipe position.

M 2: WT23-SP13-kkonkol
Activity: Complete five – 5G pipe joints using gas tungsten arc and shielded metal arc welding processes. Activity: Complete five – 2G pipe joints using gas tungsten arc and shielded metal arc welding processes. Assessment Method: Instructor evaluation via visual and/or side bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity: Complete five – 5G pipe joints using gas tungsten arc and shielded metal arc welding processes. Activity: Complete five – 2G pipe joints using gas tungsten arc and shielded metal arc welding processes. Assessment Method: Instructor evaluation via visual and/or side bend tests.

Finding (2012-2013) - Target: Partially Met
One of the two or 50% of students completed the activity in SLO number one. The other student enrolled in the class for personal reasons and completed objectives set forth by them. No changes necessary.

SLO 2: WT 23-SLO 2
Apply ER4043 to aluminum and ER308 to stainless steel joint designs using the gas tungsten arc welding process on 16g metal.

SLO 3: WT 23-SLO 3
Complete a 2G and a 5G pipe certification, using gas tungsten arc and shielded metal arc welding, which meets or exceeds the American Welding Society D1.1 Structural Welding Code standards.

Details of Action Plans for This Cycle (by Established cycle, then alpha)

WT23-FA12-AP-kkonkol
Increase number of practice coupons for the 5g pipe position.

Established in Cycle: 2012-2013
Implementation Status: Planned
Priority: Low

Relationships (Measure | Student Learning Outcomes / Administrative Unit Outcomes):
Measure: WT23-FA12-kkonkol | **Student Learning Outcomes / Administrative Unit Outcomes:** WT 23-SLO 1

Detailed Assessment Report
2012-2013 WT 36-Welding Theory & Practice - Oxyacetylene

As of: 10/22/2013 11:18 AM PDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 36-One Unit SLO 1
Safely setup and perform a minimum of ten welds for each of four AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16g hot roll steel with RG 45 filler rod.

Related Measures

M 1: WT36-FA12-kkonkol
Activity: Perform a minimum of ten welds for each of four AWS joint designs. Assessment Method: Instructor evaluating using visual and/or bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Criteria: A minimum of eight out of ten welds, for each of four AWS joint designs, will meet or exceed industry standards.

Finding (2012-2013) - Target: Met
83% of the students met the minimum criteria.

M 2: WT36-SP13-kkonkol
Activity: Perform a minimum of ten welds for each of four AWS joint designs. Assessment Method: Instructor evaluating using visual and/or bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity: Perform a minimum of ten welds for each of four AWS joint designs. Assessment Method: Instructor evaluating using visual and/or bend tests.

Finding (2012-2013) - Target: Partially Met
Three out of the six students or 50% completed the activity. The other 50% didn't complete the activity due to lack of attendance. No changes necessary.

SLO 2: WT 36-One Unit SLO 2
Perform a name cutout of 3/16"-1/4" steel, with a minimum of four letters (initial letter 2", remaining 1 ½"), using the oxyacetylene cutting (OAC) process.

SLO 4: WT 36-Two Units SLO 1
Safely setup and perform a minimum of ten welds for each of nine AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16g hot roll steel with RG 45 filler rod.

SLO 6: WT 36-Three Units SLO 1
Safely setup and perform a minimum of ten welds for each of twelve AWS joint designs, using OAW, on 16g hot roll steel with RG 45 filler rod.

SLO 8: WT 36-Three Units SLO 2
Fabricate watertight and airtight joint designs, to welding shop standards, using oxyacetylene welding.

Detailed Assessment Report
2012-2013 WT 37-Welding Theory & Practice - Shielded Metal Arc Welding
As of: 10/22/2013 11:18 AM PDT
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 37-One Unit SLO 1
Safely setup and perform flat stringer and flat overlap welds with a minimum of 10 passes each using ER7018-1/8", and ER6011-1/8" electrodes, which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.

Related Measures

M 1: WT37-FA12-kkonkol
Activity: Complete an AWS (American Welding Society) 1g qualification test on 3/8" steel plate, using 1/8" ER7018 welding rod. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity: Complete an AWS (American Welding Society) 1g qualification test on 3/8" steel plate, using 1/8" ER7018 welding rod. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Finding (2012-2013) - Target: Partially Met
Four out of the nine students or 44% completed the activity. The remaining 66% didn't complete the activity due to lack of attendance and incomplete work. No changes necessary.

M 2: WT37-SP13-kkonkol
Activity: Complete an AWS (American Welding Society) 1g qualification test on 3/8" steel plate, using 1/8" ER7018 welding rod. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity: Complete an AWS (American Welding Society) 1g qualification test on 3/8" steel plate, using 1/8" ER7018 welding rod. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Finding (2012-2013) - Target: Partially Met
Four out of the fourteen students or 28% completed the activity. The remaining 72% didn't complete the activity due to lack of attendance and incomplete work. No changes necessary.

SLO 2: WT 37-One Unit SLO 2
Safely setup and perform a minimum of 10 passes for each of the two AWS joint designs with ER7018-1/8", and two with ER6011-1/8" electrodes which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.

SLO 4: WT 37 Two Units SLO 1
Safely setup and perform flat stringer and flat overlap welds with a minimum of 10 passes each using ER7018-1/8", and ER6011-1/8" electrodes, which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.

SLO 5: WT 37-Two Units SLO 2
Safely setup and perform a minimum of 10 passes for each of the three AWS joint designs with ER7018-1/8", and three with ER6011-1/8" electrodes which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.

SLO 6: WT 37-Two Units SLO 3
Complete two AWS (American Welding Society) certifications on steel plate with ER7018, using the SMAW (shielded metal arc welding) process.

SLO 7: WT 37-Three Units SLO 1
Safely setup and perform flat stringer and flat overlap welds with a minimum of 10 passes each using ER7018-1/8", and ER6011-1/8" electrodes, which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.

SLO 8: WT 37-Three Units SLO 2
Safely setup and perform a minimum of 10 passes for each of three AWS joint designs with ER7018-5/32", three with ER7018-1/8", three with ER6011-5/32" and three with ER6011-1/8" electrodes which meet or exceed the AWS D1.1 Structural Welding Code standards, using SMAW on 3/8" plate.

SLO 9: WT 37-Three Units SLO 3
Complete three AWS (American Welding Society) certifications on steel plate with ER7018, using the SMAW (shielded metal arc welding) process.

Detailed Assessment Report
2012-2013 WT 38-Welding Theory & Practice - Gas Metal Arc Welding
As of: 10/22/2013 11:18 AM PDT
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 38-One Unit SLO 1
Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on 10G steel plate with CO2 shielding and ER70S .035" diameter fill wire.

SLO 2: WT 38-One Unit SLO 2
Design and fabricate two projects using 16G-10G steel, CO2 shielding, ER70S .035" diameter fill wire, and the gas metal arc welding process.

Related Measures

M 3: WT38-SP13-kkonkol
Activity: Complete an AWS (American Welding Society) 3F qualification test on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity: Complete an AWS (American Welding Society) 3F qualification test on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Finding (2012-2013) - Target: Partially Met
Eight out of the seventeen students or 47% completed the activity. The remaining 53% didn't complete the activity due to a lack of attendance or were hobbyists learning a new skill. No changes necessary.

SLO 3: WT 38-One Unit SLO 3
Complete an AWS (American Welding Society) 3F qualification test on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.

Related Measures

M 2: WT38-FA12-kkonkol
Activity: Complete an AWS (American Welding Society) 3F qualification test on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Criteria: 80% of the students will pass the 3F welding qualification test.

Finding (2012-2013) - Target: Met
Five out of five students passed the 3F welding qualification test.

SLO 4: WT 38-Two Units SLO 1
Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on 10G steel plate with CO2 shielding and ER70S .035" diameter fill wire.

SLO 5: WT 38-Two Units SLO 2
Design and fabricate four projects using 16G-10G steel, CO2 shielding, ER70S .035" diameter fill wire, and the gas metal arc welding process.

SLO 6: WT 38-Two Units SLO 3

Complete two AWS (American Welding Society) certifications on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.

SLO 7: WT 38-Three Units SLO 1
Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on 10G steel plate with CO2 shielding and ER70S .035" diameter fill wire.

SLO 8: WT 38-Three Units SLO 2
Design and fabricate six projects using 16G-10G steel, CO2 shielding, ER70S .035" diameter fill wire, and the gas metal arc welding process.

SLO 9: WT 38-Three Units SLO 3
Safely setup and perform a minimum of 10 passes for each of four AWS (American Welding Society) joint designs, which meet or exceed industry standards using gas metal arc welding (GMAW) on 10G aluminum plate with argon shielding and ER 4043 .035" fill wire.

SLO 10: WT 38-Three Units SLO 4
Complete three AWS (American Welding Society) certifications on steel plate with .035" ER70S, using the GMAW (gas metal arc welding) process.

Detailed Assessment Report
2012-2013 WT 39-Welding Theory & Practice - Gas Tungsten Arc Welding
As of: 10/22/2013 11:18 AM PDT
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 39-One Unit SLO 1
Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed the American Welding Society D1.1 Structural Welding Code standards), using gas tungsten arc welding (GTAW) on 16G steel plate with 2% thoriated tungstens and ER 70S fill rod.

Related Measures

M 2: WT39-SP13-kkonkol
Activity: Complete an AWS (American Welding Society) 3F qualification test on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Activity: Complete an AWS (American Welding Society) 3F qualification test on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Finding (2012-2013) - Target: Partially Met
Two out of the seven students or 29% completed the activity. The remaining 71% didn't complete the activity due to lack of attendance. No changes necessary.

SLO 2: WT 39-One Unit SLO 2
Design and fabricate two projects using 16G steel, argon shielding, ER70S fill wire, and the gas tungsten arc welding process.

SLO 3: WT 39-One Unit SLO 3
Complete an AWS (American Welding Society) 3F qualification test on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process.

Related Measures

M 1: WT39-FA12-kkonkol
Activity: Complete an AWS (American Welding Society) 3F qualification test on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process. Assessment Method: Instructor visual and/or bend test per AWS D1.1 code book.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
Criteria: 80% of the students will pass the 3F, GTAW welding qualification test.

Finding (2012-2013) - Target: Met
Two out of two students passed the 3F welding qualification test.

SLO 4: WT 39-Two Units SLO 1
Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed the American Welding Society D1.1 Structural Welding Code standards), using gas tungsten arc welding (GTAW) on 16G steel plate with 2% thoriated tungstens and ER 70S fill rod.

SLO 5: WT 39-Two Units SLO 2
Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed industry standards), using gas tungsten arc welding (GTAW) on 16G stainless steel plate with 2% thoriated tungstens and ER 308 fill rod.

SLO 6: WT 39-Two Units SLO 3
Design and fabricate two projects using 16G stainless steel, argon shielding, ER308 fill wire, and the gas tungsten arc

welding process.

SLO 7: WT 39-Two Units SLO 4
Complete two AWS (American Welding Society) certifications on steel plate with 1/16" ER70S, using the GTAW (gas tungsten arc welding) process.

SLO 8: WT 39-Three Units SLO 1
Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed the American Welding Society D1.1 Structural Welding Code standards), using gas tungsten arc welding (GTAW) on 16G steel plate with 2% thoriated tungstens and ER 70S fill rod.

SLO 9: WT 39-Three Units SLO 2
Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed industry standards), using gas tungsten arc welding (GTAW) on 16G stainless steel plate with 2% thoriated tungstens and ER 308 fill rod.

SLO 10: WT 39-Three Unit-SLO 3
Safely setup and perform a minimum of 10 passes for each of 10 AWS (American Welding Society) joint designs (which meet or exceed industry standards), using gas tungsten arc welding (GTAW) on 16G aluminum plate with pure tungsten and ER4043 fill rod.

SLO 11: WT 39-Three Unit-SLO 4
Design and fabricate two projects using 16G aluminum, argon shielding, ER 4043 fill wire, and the gas tungsten arc welding process.

SLO 12: WT 39-Three Unit-SLO 5
Complete three AWS (American Welding Society) certifications on steel plate with ER70S, using the GTAW (gas tungsten arc welding) process.

Detailed Assessment Report
2012-2013 WT 40-Oxyacetylene Welding

As of: 10/22/2013 11:18 AM PDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 40-SLO 1
Safely setup and perform a minimum of ten welds for each of four AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that meet or exceed industry standards.

Related Measures

M 1: WT40-FA12-erulofson
Students will safely setup and perform a minimum of ten welds for each of four AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that will meet or exceed industry standards.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
80% of students will safely setup and perform a minimum of ten welds, with 5% or less defect, for each of four AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that will meet or exceed industry standards.

Finding (2012-2013) - Target: Partially Met
Course contained one student who completed 50% of the SLO 1 target.

SLO 2: WT 40-SLO 2
Perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using oxyacetylene welding (OAW), on 16G hot roll steel with RG 45 filler rod that pass industry standards for visual and destructive testing.

SLO 3: WT 40-SLO 3
Perform a minimum of ten 7" manual and track burner cuts on 3/8", ½", and 1" steel that are 90 degree cuts, minimal slag, and no gouging, using oxyacetylene cutting.

SLO 4: WT 40-SLO 4
Perform a minimum of ten 7" manual cuts on 10G steel that meet or exceed industry standards, using plasma cutting.

Detailed Assessment Report
2012-2013 WT 42-Intermediate Shielded Metal Arc Welding

As of: 10/22/2013 11:18 AM PDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 42-SLO 1
Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.

Related Measures

M 1: WT42-FA12-erulofson
Activity: Students will safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate. Assessment Method: Instructor evaluation using visual and/or bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
80% of the students will complete SLO #1

Finding (2012-2013) - Target: Not Met
The course contained one student who did not meet SLO #1

M 2: WT42-SP13-erulofson
Activity: Students will safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate. Assessment Method: Instructor evaluation using visual and/or bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
80% of the students will complete SLO #1

Finding (2012-2013) - Target: Met
100% of the students completed SLO #1. No changes at this time.

SLO 2: WT 42-SLO 2
Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER7018 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.

SLO 3: WT 42-SLO 3
Complete two limited and one unlimited thickness AWS (American Welding Society) certifications, using the shielded metal arc welding process.

Detailed Assessment Report
2012-2013 WT 43-Advanced Shielded Metal Arc Welding

As of: 10/22/2013 11:18 AM PDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 43-SLO 1
Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER6011 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.

SLO 2: WT 43-SLO 2
Safely setup and perform a minimum of ten welds for each of ten AWS (American Welding Society) joint designs, using ER7018 – 1/8" and 5/32" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using shielded metal arc welding (SMAW) on 3/8" steel plate.

SLO 3: WT 43-SLO 3
Complete two limited and two unlimited thickness AWS (American Welding Society) certifications, using the shielded metal arc welding process.

Detailed Assessment Report
2012-2013 WT 44-Gas Metal Arc Welding

As of: 10/22/2013 11:18 AM PDT

(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 44-SLO 1
Safely setup and perform a minimum of ten welds for each of six AWS (American Welding Society) joint designs, using ER70S .035" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on steel.

Related Measures

M 1: WT44-FA12-erulofson
Activity: Students will safely setup and perform a minimum of ten welds for each of six AWS (American Welding Society) joint designs, using ER70S .035" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on steel. Assessment Method: Instructor evaluation using visual and/or bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
80% of the students will complete SLO #1

Finding (2012-2013) - Target: Partially Met
50% of the students completed SLO 1

M 2: WT44-SP13-erulofson
Activity: Safely setup and perform a minimum of ten welds for each of six AWS (American Welding Society) joint designs, using ER70S .035" electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using gas metal arc welding (GMAW) on steel. Assessment Method: Instructor evaluation using visual and/or bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
80% of the students will complete SLO #1

Finding (2012-2013) - Target: Met
100% of the students completed SLO #1. No changes at this time.

SLO 2: WT 44-SLO 2
Safely setup and perform a minimum of ten welds for each of six AWS (American Welding Society) joint designs, using ER71T electrodes, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using flux cored arc welding (FCAW) on steel.

SLO 3: WT 44-SLO 3
Complete two gas metal arc (GMA) and two flux cored arc welding (FACW) AWS (American Welding Society) certifications.

Detailed Assessment Report
2012-2013 WT 45-Gas Tungsten Arc Welding
As of: 10/22/2013 11:18 AM PDT
(Includes those Action Plans with Budget Amounts marked *One-Time, Recurring, No Request.*)

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: WT 45-SLO 1
Safely setup and perform a minimum of ten welds for each of fifteen AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using the gas tungsten arc welding process (GTAW) on steel, stainless steel, and aluminum.

Related Measures

M 1: WT45-SP13-erulofson
Activity: Safely setup and perform a minimum of ten welds for each of fifteen AWS (American Welding Society) joint designs, which meet or exceed the American Welding Society D1.1 Structural Welding Code standards, using the gas tungsten arc welding process (GTAW) on steel, stainless steel, and aluminum. Assessment Method: Instructor evaluation using visual and/or bend tests.

Source of Evidence: Performance (recital, exhibit, science project)

Target:
80% of the students will complete SLO #1

Finding (2012-2013) - Target: Met
80% of the students will complete SLO #1

SLO 2: WT 45-SLO 2
Fabricate watertight and airtight joint designs on steel, stainless steel, and aluminum, to welding shop standards, using the gas tungsten arc welding (GTAW) process.

SLO 3: WT 45-SLO 3
Complete a 1F, 2F, 3F, and 4F AWS (American Welding Society) certifications on steel plate, using the GTAW (gas tungsten arc welding) process.

Appendix:

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Student Evaluation Summary

				1. Educational Goal													2. Your need for this Course								3. Type of Course				4. Does the Course content reasonably compare with the catalog/schedule description?		5. Did the explain the o courses in thi be
				General ED					Degrees/Certificates					General Interest																	
Course	Name of Program	Date Completed		Transfer to 4-yr Institution	IGETC	CSU Cert	UNR Cert	Transfer to another CC	AA/AS	Cert of Achieve-ment	Cert of Completio n	Cert of Accomp-lishment	Title of Degree/Cert	Job Req.	Cont. Ed	Personal Develop-ment	Core Req. for Degree/ Cert	Elective for Degree/ Cert.	General Ed Course for Degree/ Transfer	Job Req	Cont. Ed	Personal Develop-ment	Other	Please Specify	Lecture Only	Lecture/ Lab Comb.	Lab Only	Activity Course	Yes	No	Yes
WT-20	Welding	10/14/13	1							x				x	x	x				x	x	x				x			x		x
		10/15/13	1							x	x			x	x	x	x	x		x						x			x		x
		10/15/13	1								x					x										x			x		x
		10/15/13	1						x								x					x	x	work at home		x			x		x
		10/15/13	1	x					x						x											x			x		x
		10/15/13	1						x	x	x	x		x	x	x	x			x		x				x			x		x
		10/15/13	1													x						x						x		x		x
		10/15/13	1												x	x					x	x				x			x		x
		10/15/13	1						x							x					x	x				x			x		x
		10/15/13	1													x					x	x				x			x		x
		10/15/13	1													x						x				x					
WT-22	Welding	10/15/13	1						x					x	x	x	x			x	x	x				x			x		x
		10/15/13	1						x				AS Welding Technology					x								x			x		x
			14	1	0	0	0	0	6	3	3	1		4	6	10	4	2	1	4	4	9	1		0	13	0	2	12	0	12
				7.14%	0.00%	0.00%	0.00%	0.00%	42.86%	21.43%	21.43%	7.14%		28.57%	42.86%	71.43%	400.00%	14.29%	7.14%	28.57%	28.57%	64.29%	7.14%		0.00%	92.86%	0.00%	14.29%	85.71%	0.00%	85.71%
WT-36	Welding	10/16/13	1												x	x	x				x	x						x		
		10/16/13	1																			x						x		
		10/15/13	1													x						x						x		x
WT-38	Welding	10/15/13	1												x	x					x	x						x		x
			4	0	0	0	0	0	0	0	0	0		0	2	3	1	0	0	0	2	4	0		0	0	3	1	4	0	3
				0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		0.00%	50.00%	75.00%	#DIV/0!	0.00%	0.00%	0.00%	50.00%	100.00%	0.00%		0.00%	0.00%	75.00%	25.00%	100.00%	0.00%	75.00%
WT-44	Welding	10/14/13	1						x										x							x			x		x
			1	0	0	0	0	0	1	0	0	0		0	0	0	0	0	1	0	0	0	0		0	1	0	0	1	0	1
				0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%		0.00%	0.00%	0.00%	#DIV/0!	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%		0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	100.00%
WT-31	Welding for Gunsmiths	10/14/13	1						x				General Gunsmithing		x		x									x			x		x
		10/15/13	1						x				Firearms Repair				x									x			x		x
		10/15/13	1						x								x			x						x			x		x
		10/15/13	1						x				Gunsmithing				x									x			x		x
		10/15/13	1						x				General Gunsmithing/Firearms Repair				x									x			x		x
		10/15/13	1								x		General Gunsmithing			x	x									x					
		10/15/13	1						x				Gunsmithing				x									x			x		x
		10/15/13	1													x	x					x				x					
		10/15/13	1						x							x	x					x				x			x		x
		10/15/13	1						x							x	x					x				x			x		x
		10/15/13	1						x							x	x					x				x			x		x
		10/15/13	1						x				Firearms Repair				x									x			x		x
		10/15/13	1	x				x	x	x	x	x		x	x	x	x			x	x	x				x					
		10/15/13	1						x	x	x				x	x	x			x	x	x				x			x		x
		10/15/13	1					x	x	x	x	x	Gunsmithing																			
		10/15/13	1						x						x	x	x			x	x	x				x			x		x
		10/15/13	1						x														x	Gunsmithing		x			x		x
			20	1	0	0	0	2	18	3	4	2		1	4	7	17	0	0	4	3	6	1		0	18	0	1	16	0	15
				5.00%	0.00%	0.00%	0.00%	10.00%	80.00%	15.00%	20.00%	10.00%		5.00%	20.00%	35.00%	1700.00%	0.00%	0.00%	20.00%	15.00%	30.00%	5.00%		0.00%	90.00%	0.00%	5.00%	80.00%	0.00%	75.00%

the textbook(s) e adequately ed?	8. Was a syllabus for the course provided at the beginning of the course?		8.a. If yes, did the syllabus clearly identify the student learning outcomes for this course?		Scheduling									9. The scheduling of this course				Facilities/Equipment		facilities for this course/program adequately meet your needs?									
No	Yes	No	Yes	No	Current schedule met my needs	needed moring offering	needed afternoon offering	needed evening offering	needed one day a week schedule	needed summer offering	needed week-end offering	needed short-term (less than a semester) offering	Other - Please specify	resulted in no scheduling conflicts	other core (required) courses in the program	conflicted with elective courses in the program	conflicted with general education courses	provided with reasonable access to	facilities were unavailable at times	The temp was comfortable	The temp was frequently too hot	The temp was frequently too cold	Not Applicable	The lighting was adequate	The lightingwas too bright	The lighting was too dark	Not applicable	The chairs/tables/desks adequate	The chairs/tables/desks inadequate
	x		x								x			x				x		x				x				x	
	x		x		x																								
	x		x		x									x				x		x				x				x	
	x		x		x									x				x		x				x				x	
	x		x		x									x				x		x				x				x	
					x									x				x											
	x		x		x									x				x		x				x				x	
	x		x		x									x				x		x				x				x	
	x		x		x									x				x		x				x				x	
																		x		x				x				x	
	x		x		x													x		x				x				x	
					x									x				x		x				x				x	
	x		x		x									x				x		x				x				x	
	x		x		x									x				x		x				x				x	
0	11	0	11	0	12	0	0	0	0	0	1	0		11	0	0	0	13	0	12	0	0	0	12	0	0	0	12	0
0.00%	78.57%	0.00%	78.57%	0.00%	85.71%	0.00%	0.00%	0.00%	0.00%	0.00%	7.14%	0.00%		78.57%	0.00%	0.00%	0.00%	92.86%	0.00%	85.71%	0.00%	0.00%	0.00%	85.71%	0.00%	0.00%	0.00%	85.71%	0.00%
	x		x		x									x				x								x		x	
		x			x									x				x					x				x	x	
	x		x		x									x				x		x						x		x	
	x		x		x									x				x		x				x				x	
0	3	1	3	0	4	0	0	0	0	0	0	0		4	0	0	0	4	0	2	0	0	1	1	0	2	1	4	0
0.00%	75.00%	25.00%	75.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	50.00%	0.00%	0.00%	25.00%	25.00%	0.00%	50.00%	25.00%	100.00%	0.00%
	x		x								x			x				x			x					x		x	
0	1	0	1	0	0	0	0	0	0	0	1	0		1	0	0	0	1	0	0	1	0	0	0	0	1	0	1	0
0.00%	100.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%		100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%
	x		x		x									x				x			x					x			x
	x		x						x						x			x			x					x			x
	x		x		x									x				x		x						x			x
	x		x		x									x				x		x						x		x	
	x		x		x											x		x		x						x		x	
	x		x		x									x				x		x				x				x	
	x		x		x										x			x		x				x					x
	x		x		x									x				x		x						x			x
	x		x		x									x				x		x				x				x	
	x		x		x									x				x			x					x			x
	x				x									x				x			x					x			x
	x		x											x					x	x						x			x
	x		x		x									x				x		x						x		x	
	x		x								x					x		x											
	x		x									x	Cept for Wednesday, should be Friday.		x			x					x			x		x	
	x		x										New schedule by Gunsmithing program. Previous schedule was 3 weeks 8-5 only. New schedule adds 3 additional weeks of machine shop and moved welding to two nights per week for full semester. This change results a 6 day per week schedule, perhaps too excessive. Recommend reexamination of schedule	x				x		x						x			x
	x		x		x									x				x		x				x					x
	x		x		x									x				x		x				x				x	
0	18	0	17	0	13	0	0	0	1	0	1	1		13	3	2	0	17	1	12	4	0	1	5	0	12	0	7	10
0.00%	90.00%	0.00%	85.00%	0.00%	65.00%	0.00%	0.00%	0.00%	5.00%	0.00%	5.00%	5.00%		65.00%	15.00%	10.00%	0.00%	85.00%	5.00%	60.00%	20.00%	0.00%	5.00%	25.00%	0.00%	60.00%	0.00%	35.00%	50.00%

eet your needs?				11. If applicable, do the off-campus site (i.e. Roosevelt Pool, Memorial Park, Westwood Center, tec.) Identify the specific					Facilities/Equipment 12. Did the course/program provide the necessary equipment?												13. Describe how this course/program could be improved to better meet the needs of the students at Lassen Community College.	14. Provide any adc
Not Applicable	The lighting was adequate	The lighting was too bright	The lighting was too dark	Not applicable	The chairs/tables/desks adequate	The chairs/tables/desks inadequate	Not applicable	Please Specify	Sufficient equip for # of students	Insufficient equip for # of students	Not Applicable	time on equipment was allowed	time on equipment was allowed for each	Not Applicable	Equipment was current up-do-date	Equipment was out-dated	Not applicable	was generally in good operating	was generally broken or inoperable	Not applicable		
									x			x			x			x			I need a class that provides computer welding equipment	A class on computer prog
									x			x			x			x				
										x		x				x		x			It's fine to me change the wire wheel on the grinders out back sometimes.	
										x		x				x		x			Get Kory a TA of sorts because he can't do it all when its busy. We need decent helmets!!!	Kory is an exceptional tea we need, all our hard wor a #1 Priority
									x			x			x			x			Larger for more students	I like this course.
									x			x			x			x				
									x			x			x			x				
									x			x			x			x				
									x			x			x			x				
									x			x			x			x			Better ventalation	Great course
0	0	0	0	0	0	0	0		x			x			x			x			N/A	N/A
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		10	2	0	11	0	0	10	2	0	12	0	0		
									71.43%	14.29%	0.00%	78.57%	0.00%	0.00%	71.43%	14.29%	0.00%	85.71%	0.00%	0.00%		
									x			x				x		x			Automated plasma cutting machine	
									x			x			x			x				
									x			x			x			x				Better lighting for us old g
									x			x			x			x			This is a good program for the college.	A better ventilation systen instructor does a very goc welding process.
0	0	0	0	0	0	0	0		4	0	0	4	0	0	3	1	0	4	0	0		
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	75.00%	25.00%	0.00%	100.00%	0.00%	0.00%		
									x			x				x		x			We could use some more lighting and ventilation in the shop and more up to date equipment and a computerized cutting system. More time with shop opened.	Kory is a great teacher an
0	0	0	0	0	0	0	0		1	0	0	1	0	0	0	1	0	1	0	0		
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		100.00%	0.00%	0.00%	100.00%	0.00%	0.00%	0.00%	100.00%	0.00%	100.00%	0.00%	0.00%		
									x			x			x			x			good	good
									x			x			x			x			more lighting	
									x			x			x			x			Needs better lighting and ventilation.	
									x			x			x			x				
									x			x			x			x				
										x			x		x			x			need additional GTAW machines.	
										x			x			x		x				
									x			x			x			x			More machines, tools and supplies (i.e. filler rod, etc.)	
										x		x			x			x			Better tools are needed. Better ventilation.	I am very happy with the c
										x			x		x				x		Equipment is part new part old and the removal of old gear would be beneficial for the studnets overall education goals.	Students from other classe deliberately be destrictive do have respect and respc
										x		x				x			x			
										x			x		x			x			More welding machines	
									x												Get the best Miller Tig machine that money can buy.	
										x											N/A	N/A
									x				x		x			x			Recommend sufficient funds to replace broken equipment such as tig torches, tail caps, collets, gas welding nozzels, etc.	Very good facility and prog
										x			x		x			x			More welders	
									x			x			x			x			N/A	Cory kicks ass!!
0	0	0	0	0	0	0	0		9	8	0	9	6	0	13	2	0	13	2	0		
0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%		45.00%	40.00%	0.00%	45.00%	30.00%	0.00%	65.00%	10.00%	0.00%	65.00%	10.00%	0.00%		

Appendix:

I

Advisory Board Committee Meeting and Minutes

Lassen Community College
Welding Advisory Board Meeting
July 14, 2014

Present: Robert Bengard, Greg Blevins, Dallas Longley, Fed Nagel, Jason Wade, Ross Stevenson, Marlon Hall, Kory Konkol, Fran Oberg

Called to Order: 12:05pm

1. **Introductions**
   Tour of the shop

2. **State of the Welding Program reviewed** (see attached report)
   a. Enrollments (Pages 3,4)
   b. Curriculum – Current and future offerings (Pages 5-11)
   c. Scheduling (Pages 12-15)
   d. Equipment (Pages 16,17)
   e. Expansion – History, present and future (Pages 18,19)
   f. Improvements – Completed (Pages 20,21)

3. **Advertising reviewed** (see attached report)
   a. Marketing (Pages 22-24)
   b. Recruiting/Outreach (Pages 25,26)

4. **Recommendations – Discussion**

- Possibility of offering an "Intro to Welding Shop" course as a pre-requisite. Students would learn proper use of shop equipment (grinders, cutter, etc.) Could be 0.5 unit class.
- Outreach for placing students & tracking where they go after LCC.
- LCC does not believe in getting the student a job. Teaching just enough skills so students can get a specific job (for example, at PG&E) is a disservice to the student. What happens when that job ends? LCC's program is well-rounded and broad, covering 8 processes and different materials. Students will be able to get a job anywhere. LCC refers students to Alliance for Workforce Development for assistance in job searching.
- Cost of renting bottles is high. A proposal was made to purchase Argon, CO2, O2 bottles, and by doing so, there would be a considerable savings on rental fees. Approximate cost is $4500. Suggestion made to put details on paper and show amortization schedule.
- CNC plasma cutter—identify manufacturing/production applications and needs. TorchMate in Reno could be a source to purchase the equipment. TorchMate offers curriculum to operate their equipment, which we can offer a future class/training around.

having the students learn skills to be proficient enough to get a job. Many times, that does not mean completing a degree or certificate.

- Industry is de-emphasizing use of 5/32" SMAW electrodes. It is good for students to know, but industry is going to 1/8" and 3/32" electrodes. The proposal for new curriculum for WT-42 is to take out 5/32" and replace it with open root using Gas Tungsten Arc Welding (GTAW) in different positions.
- Is there still a need for WT-43? By changing WT-43 to GTAW open root on plate, we would provide exposure to real world applications and industry needs
- Discussion on how class progression works. Can requirements for the 1 year certificate be cut back or changed so that requirements are still met but students actually finish in 1 year?
- Wade noted that sales from stick are decreasing. More welding has gone to wire. Stick is still a necessity but not as prevalent.
- Weld quality for qualifications are the same as certifications, with the difference being, certifications are on file with AWS.
- Sierra Army Depot is interested in welding qualification tests on aluminum. Konkol states that a welding procedure specification (WPS) needs to be created prior to offering the test. Konkol says there's an option to subscribe to WPS America to obtain WPS needed. WPS's are also needed to become an AWS testing facility.

Meeting adjourned at 2:00 p.m.

To: Lassen Community College
Welding Advisory Board

From: Kory Konkol

Date: July 14, 2014

Subject: Agenda – July 24, 2014 Advisory Board Meeting

Ladies and Gentlemen:

Below is the agenda for the LCC Welding Advisory Board Meeting to be held July 24, 2014 at 12:00 p.m. in the welding shop on campus.

Agenda:

1. Introductions – Advisory Committee Members, Voting and Non Voting (Page 2)

2. State of the Welding Program Pages 3-21)
   a. Enrollments (Pages 3,4)
   b. Curriculum – Current and future offerings (Pages 5-11)
   c. Scheduling (Pages 12-15)
   d. Equipment (Pages 16,17)
   e. Expansion – History, present and future (Pages 18,19)
   f. Improvements – Completed (Pages 20,21)

3. Advertising (Pages 22-26)
   a. Marketing (Pages 22-24)
   b. Recruiting/Outreach (Pages 25,26)

4. Recommendations – Discussion and vote (Page 27,28)

Welding Technology Program Advisory Board
2014 Academic Year
And Attendees

July 24, 2014

Individual	Company or Agency	Membership Qualification
Robert Bengard	Faculty Emeritus – PGT Program Lassen Community College	Voting
Greg Blevins	Operations Manager HL Power Company – Wendel, CA	Voting
Kim Keith	Career Center Advisor Alliance for Workforce Development- Susanville, CA	Voting
Dallas Langley	Maintenance Supervisor HL Power Company – Wendel, CA	Voting
Fred Nagel	Engineer Susanville, CA	Voting
Paul Niemer	Safety/Personnel Development Director Sierra Pacific Industries – Redding, CA	Voting
Jason Wade	Industry Field Sales Consultant Airgas Welding Supply – Sparks, NV	Voting
Dr. Tammy Robinson	Vice President/Dean of Instructional Services Lassen Community College	Non-Voting
Ross J. Stevenson	Mathematics Instructor CTE/PE Division Chair LCFA President Lassen Community College	Non-Voting
Dr. Marlon R. Hall	Superintendent/President Lassen Community College	Non-Voting

State of the Welding Program

Item: 2a – Enrollments

Our Students

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, welding qualification for current or future job need, high school credit, job placement, flexibility of an open entry/exit class or to brush up on their skills. To meet those needs, the welding shop is open four days a week and is staffed by one full-time, and one part-time instructor as well as a instructional support specialist. (See pages 13-15 for hours of operation)

NOTE- Current enrollment as of 7/15/14 for fall classes is: 46
That number is pre advertising and not taking into account 20+ gunsmith and an undetermined number of art students.

Summer 2013

Eric Rulofson, manager of LCC maintenance department left Lassen College and accepted a job with Oregon Institute of Technology. Eric was also a part time instructor in the welding department. Upon his departure, we were left with no one to teach the advanced welding classes (40 series). So, in order to offer those classes in the fall, I made the decision to stack the classes with my 30 series welding classes. This has worked out well since its inception in the fall of 2014 and has been done so without disrupting any of the programs offerings.

Fall 2013

In collaboration with the gunsmith department, we've re-activated the gunsmith welding classes. Upon re-activation, some modifications were made to the course outlines as well as changing the course numbers. The new classes are designated as WT-31 and WT-32. The classes are offered as beginning and advanced gas tungsten arc welding (GTAW). This addition has increased the welding program's enrollment by 20-24 students each semester. A benefit to the student is that we have a nearly 1:1 student to welder ratio verses their previous 10:1.

Fall 2014

In collaboration with the art department we've re-activated the welding for artist's class. Modifications were made to the course outline so that the course can be co-taught. Randy Panfilio will teach the one-unit lecture component (art history) and I will teach a two-unit welding lab class following his lecture. This will become another avenue to increase enrollment in the welding program, but also showcase the work produced by students around campus.

Summary

In closing, what is written above outlines what has been done to increase enrollment, but what hasn't been stated is my belief in quality versus quantity. That's' not to say our numbers are down, but to point out I now have a great group of students who are serious about welding. What has taken me to this point is no longer tolerating students who don't show up for class. Even though there are more than enough days/hours in a semester to complete their work, students will find themselves dropped from the class after a week without contacting the instructor.

State of the Welding Program

Item: 2b – 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-41 through WT-45 (Separated by type of welding process)
- Two gunsmith welding classes, WT-31 and WT-32
- Welding for artists, (NEW fall 2014) WT-50 and ART-50
- Two industrial technology offerings, IT-22 and IT-72

Please see the following (pages 7-9) taken from our course catalog for a more detailed description of individual classes.

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

Please see the following (pages 10,11) taken from our course catalog for a more detailed description.

Recommendation - Degrees and Certificates

In its current form the one-year certificate of achievement requires all four WT-20 series of classes. The problem is that only one 20-series class can be taken each semester for a total of four semesters or two-years. This hardly makes it a one-year certificate of achievement. Recommendation is to remove WT-22 and WT-23 from the requirement. This would drop the required core course units down to 22. This would still meet the requirement of a one-year certificate.

Future Class Offerings – Discussion

Some courses that may be developed for future instruction and be applied to a degree or certificate include: Rigging, measuring/practical and applied trigonometry, pipefitting, metallurgy and curriculum provided by Torchmate on the operation of their CNC cutting table. Two of these courses were brought up during a previous advisory meeting.

Textbook

Currently we require a textbook (Welding Principles and Applications, Jeffus, 6th ed.) for the WT-20 through WT-23 courses. The cost of the textbook is approximately $180 through the LCC bookstore. I also provide information on where to source the book online for one-quarter the cost.

In the near future we will be switching to a textbook that follows the American Welding Society's (AWS) SENSE (Schools Excelling through National skill Standards Education) program for level one and level two. We have become part of the SENSE program, which outlines the minimum standards and guidelines for welding curriculum.

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 intially enrolling in any Work Experience course enroll in an "Introduction to" Work Experience course in their chosen discipline. Subsequent

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.

ART-50 should read WT-50

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.

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.

Welding Technology

DEGREE

Associate in Science in Welding Technology

CERTIFICATES OF ACHIEVEMENT

Welding Technology Two-Year Plan
Welding Technology One-Year Plan

CERTIFICATE OF ACCOMPLISHMENT

Welding Technology

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 Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 22	Power Plants and Field Pipe Welding III	3.0
WT 23	Power Plants 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: Metal Arc Welding	3.0
WT 39	Welding Theory and Practice: Gas Tungsten Arc Welding	3.0

Required Electives: 18 Units

Course No	Course Title	Units
BUS 2	Introduction to Business	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

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: 52 Units
Required Core Courses: 34 Units

Course No	Course Title	Units
ENGL-1	College Composition	3.0
MATH 60	Intermediate Algebra	4.0
IT 22	Operations Maintenance and Safety	1.0
IT 72	Facilities Maintenance: Welding	2.0
WT 20	Power Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 22	Power Plants and Field Pipe Welding III	3.0
WT 23	Power Plants 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: Metal Arc Welding	3.0
WT 39	Welding Theory and Practice: Gas Tungsten Arc Welding	3.0

Required Electives: 18 Units

Course No	Course Title	Units
BUS 2	Introduction to Business	3.0
CA 31	Computer Applications I	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

Program Student Learning Outcomes

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

2. 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 - One Year

Total Units for the One-Year Certificate of Achievement: 31 Units
Required Core Courses: 28 Units

Course No	Course Title	Units
ENGL 1	College Composition	3.0
MATH 60	Intermediate Algebra	4.0
IT 22	Operations Maintenance and Safety	1.0
IT 72	Facilities Maintenance: Welding	2.0
WT 20	Power Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 22	Power Plants and Field Pipe Welding III	3.0
WT 23	Power Plants 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

Required Electives: 3 Units

Course No	Course Title	Units
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

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, D1.1.

Certificate of Accomplishment: Welding Technology

Total Units for the Certificate of Accomplishment Welding Technology: 15 Units
Required Core Courses: 15 Units

Course No	Course Title	Units
IT 22	Operations Maintenance and Safety	1.0
IT 72	Facilities Maintenance: Welding	2.0
WT 20	Power Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 36	Welding Theory and Practice: Oxyacetylene	3.0
WT 37	Welding Theory and Practice: Shielded Metal Arc Welding	3.0

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.

State of the Welding Program

Item: 2c – Scheduling

The Welding Technology Program schedules classes to provide students the opportunity to develop welding skills for a vocational career and to assist 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 available. 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-31 in the fall.

Schedules showing the days and times that the Welding Technology Program operates can be found below (Pages 13-15)

Instructor Name: Kory Konkol –WELDING **Room TR 103** **Semester: Fall 2014**

OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am – 9 am						
9 am – 10 am	WT 36-39 WT 40,42-45 Lab 9:00 Konkol		WT 36-39 WT 40,42-45 Lab 9:00 Konkol			
10 am – 11 am	WT 36-39 WT 40,42-45 Lab		WT 36-39 WT 40,42-45 Lab			
11 am – 12 pm	WT 36-39 WT 40,42-45 Lab		WT 36-39 WT 40,42-45 Lab			
12 pm – 1 pm	WT 36-39 WT 40,42-45 Lab		WT 36-39 WT 40,42-45 Lab			
1 pm – 2 pm	WT 36-39 WT 40,42-45 Lab		WT 36-39 WT 40,42-45 Lab			
2 pm – 3 pm	WT 36-39 WT 40,42-45 Lab		WT 36-39 WT 40,42-45 Lab			
3 pm – 4 pm	WT 36-39 WT 40,42-45 Lab		WT 36-39 WT 40,42-45 Lab	Office 3-4:00 Konkol		
4 pm – 5 pm	WT 36-39 WT 40,42-45 Lab	WT 22 Lec 4:00-4:50 Konkol	WT 36-39 WT 40,42-45 Lab	WT 23 Lec 4:00-4:50 Konkol		
5 pm – 6 pm	WT 36-39 WT 40,42-45 Lab 5:25 ART-50 Lec 5-5:50 R. Panfilio Office 5:25-6:00 Konkol	WT 20 Lec 5:00-5:50 Konkol	WT 36-39 WT 40,42-45 Lab 5:25 Office 5:25-6:00 Konkol	WT 21 Lec 5:00-5:50 Konkol		
6 pm – 7 pm	WT 31 6 - 7:00 Lec R. Schmidt WT-50 Lab 6-8:50 Konkol	WT 20-23 Lab 6:00-8:50	WT 31 6 - 9:20 Lab R. Schmidt WT-50 Lab 6-8:50 Konkol	WT 20-23 Lab 6:00-8:50		
7 pm – 8 pm	WT 31 Lab 7-9:20 WT-50 Lab	WT 20-23 Lab	WT 31 Lab 7-9:20 WT-50 Lab	WT 20-23 Lab		
8 pm – 9 pm	WT 31 Lab WT-50 Lab 8:50pm	WT 20-23 Lab 8:50	WT 31 Lab WT-50 Lab 8:50pm	WT 20-23 Lab 8:50		
9 pm – 10 pm	WT 31 Lab 9:20	Office 8:50-9:50 Konkol	WT 31 Lab 9:20	Office 8:50-9:50 Konkol		

Instructor Name: Kory Konkol –WELDING Semester: Spring 2014

OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am – 9 am						
9 am – 10 am	WT 36-39 WT 40-45 Lab 9:00 Konkol	IT-22 3/20 - 5/23 9:30-10:20 Konkol	WT 36-39 WT 40-45 Lab 9:00 Konkol	IT-22 3/20 - 5/23 9:30-10:20 Konkol		
10 am – 11 am	WT 36-39 WT 40-45 Lab	IT-22	WT 36-39 WT 40-45 Lab	IT-22		
11 am – 12 pm	WT 36-39 WT 40-45 Lab	IT-72 2/4 – 5-23 11:00-2:20 Konkol	WT 36-39 WT 40-45 Lab	IT-72 2/4 – 5-23 11:00-2:20 Konkol		
12 pm – 1 pm	WT 36-39 WT 40-45 Lab	IT-72	WT 36-39 WT 40-45 Lab	IT-72		
1 pm – 2 pm	WT 36-39 WT 40-45 Lab	IT-72	WT 36-39 WT 40-45 Lab	IT-72		
2 pm – 3 pm	WT 36-39 WT 40-45 Lab	IT-72	WT 36-39 WT 40-45 Lab	IT-72		
3 pm – 4 pm	WT 36-39 WT 40-45 Lab	Office 3:40-4:00 Konkol	WT 36-39 WT 40-45 Lab	Office 3:40-4:00 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 36-39 WT 40-45 Lab 5:20 Office 5:20-6:00 Konkol	WT 20 Lec 5:00-5:50 Konkol	WT 36-39 WT 40-45 Lab 5:20 Office 5:20-6:00 Konkol	WT 21 Lec 5:00-5:50 Konkol		
6 pm – 7 pm	WT 32 6:00-7:00 Lecture Konkol	WT 20-23 Lab 6:00-8:50	WT 32 6:00-9:20 Lab Konkol	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		

Fall 2014 Welding - Scheduled Classes

Term	Status	Section Name and Title	Location	Meeting Information	Faculty	Available/ Capacity/ Waitlist	Credits
2014 Fall	Open	WT-20-M0432 (0432) Power Plnt/Fld Pipe	Main Campus	TR 103, LEC, T 05:00PM - 06:00PM TR 103, LAB, TTH 06:00PM - 08:50PM	K. Konkol	25 / 35 / 0	3.00
2014 Fall	Open	WT-21-M0435 (0435) Power Plnt/Fld Pipe	Main Campus	TR 103, LEC, TH 05:00PM - 06:00PM TR 103, LAB, TTH 06:00PM - 08:50PM	K. Konkol	34 / 35 / 0	3.00
2014 Fall	Open	WT-22-M0434 (0434) Power Plnt/Fld Pipe	Main Campus	TR 103, LEC, T 04:00PM - 04:50PM TR 103, LAB, TTH 06:00PM - 08:50PM	K. Konkol	28 / 35 / 0	3.00
2014 Fall	Open	WT-23-M0596 (0596) Power Plnt/Fld Pipe	Main Campus	TR 103, LEC, TH 04:00PM - 04:50PM TR 103, LAB, TTH 06:00PM - 08:50PM	K. Konkol	35 / 35 / 0	3.00
2014 Fall	Open	WT-31-M0455 (0455) Glaw for Gunsmiths	Main Campus	TR 102, LEC, M 06:00PM - 07:00PM TR 102, LAB, M 07:00PM - 09:20PM TR 102, LAB, W 06:00PM - 09:20PM Students must be accepted into the Gunsmithing Program prior to enrollment in this class. For more information, please contact the Gunsmithing Office at 530.251.8800	R. Schmidt	21 / 22 / 0	3.00
2014 Fall	Open	WT-36-M0662 (0662) Wldg Thry&prac-Oxy	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. This is an open entry/open exit/variable unit class. Students will complete 51 hours of lab per unit attempted. For more information and to arrange lab hours contact instructor at kkonkol@lassencollege.edu or 530.251.8887. This variable unit course can be taken for 1 - 3 units in increments of 1 units.	K. Konkol	29 / 35 / 0	1.00
2014 Fall	Open	WT-37-M0659 (0659) Wldg Thry&prac-Shld	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. This is an open entry/open exit/variable unit class. Students will complete 51 hours of lab per unit attempted. For more information and to arrange lab hours contact instructor at kkonkol@lassencollege.edu or 530.251.8887. This variable unit course can be taken for 1 - 3 units in increments of 1 units.	K. Konkol	30 / 35 / 0	1.00
2014 Fall	Open	WT-38-M0467 (0467) Wldg Thry&prac-Gas	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. This is an open entry/open exit/variable unit class. Students will complete 51 hours of lab per unit attempted. For more information and to arrange lab hours contact instructor at kkonkol@lassencollege.edu or 530.251.8887. This variable unit course can be taken for 1 - 3 units in increments of 1 units.	K. Konkol	33 / 35 / 0	1.00
2014 Fall	Open	WT-39-M0477 (0477) Wldg Thry&prac-Gas	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. This is an open entry/open exit/variable unit class. Students will complete 51 hours of lab per unit attempted. For more information and to arrange lab hours contact instructor at kkonkol@lassencollege.edu or 530.251.8887. This variable unit course can be taken for 1 - 3 units in increments of 1 units.	K. Konkol	33 / 35 / 0	1.00
2014 Fall	Open	WT-40-M0476 (0476) Oxyacetylene Welding	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. Students will complete 153 hours of lab to complete the course. For more information and to arrange lab hours, contact instructor at kkonkol@lassencollege.edu or 530.251.8887.	K. Konkol	32 / 35 / 0	3.00
2014 Fall	Open	WT-42-M2037 (2037) Intermediate Smaw	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. Students will complete 153 hours of lab to complete the course. For more information and to arrange lab hours, contact instructor at kkonkol@lassencollege.edu or 530.251.8887.	K. Konkol	35 / 35 / 0	3.00
2014 Fall	Open	WT-43-M2038 (2038) Advanced Smaw	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. Students will complete 153 hours of lab to complete the course. For more information and to arrange lab hours, contact instructor at kkonkol@lassencollege.edu or 530.251.8887.	K. Konkol	32 / 35 / 0	3.00
2014 Fall	Open	WT-44-M2039 (2039) Gas Metal Arc Welding	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. Students will complete 153 hours of lab to complete the course. For more information and to arrange lab hours, contact instructor at kkonkol@lassencollege.edu or 530.251.8887.	K. Konkol	31 / 35 / 0	3.00
2014 Fall	Open	WT-45-M0483 (0483) Gas Tungsten Arc Welding	Main Campus	TR 103, LAB, Days/Times TBA Lab hours are Monday and Wednesday 9:00am to 5:25pm. Students will complete 153 hours of lab to complete the course. For more information and to arrange lab hours, contact instructor at kkonkol@lassencollege.edu or 530.251.8887.	K. Konkol	33 / 35 / 0	3.00
2014 Fall	Open	WT-50-M0145 (0145) Welding for Artists	Main Campus	TR 103, LAB, MW 06:00PM - 08:50PM This course is being offered in conjunction with ART-50, a one unit lecture class and must be taken simultaneously for a combined three-units. For more information please contact instructor at kkonkol@lassencollege.edu.	K. Konkol	15 / 15 / 0	2.00

State of the Welding Program

Item: 2d – Equipment

History

The welding departments primary means for purchasing new equipment is from money awarded through grants. In particular, the CTE (Career and Technical Education) grant. Smaller purchases are made by way of the welding departments budget. Less common is by way of donations.

Over the past two grant cycles we've been able to purchase eight new Miller Dynasty 200's. The eight machines perform both gas tungsten and shielded metal arc welding (GTAW/SMAW) functions. The machines were purchased to meet the demand of the gunsmith welding students. With the Miller purchase, the welding shop is now able to provide 18 individual GTAW machines for the 20+ gunsmith students.

Future

There is always a need or demand for more equipment. We often call these wish lists. These items fall into a category generally beyond our allotted department budget. More important, the list is created from a need or necessity not a whim or a wish. Below is a list of items that have come from a need or necessity and a reason for that need or necessity.

- On a monthly basis, and not including the cost of the gas, the welding program incurs a cylinder rental fee that is over $200 dollars a month. My recommendation is to purchase our own bottles, so our only expense would be the cost to have the bottles refilled.
- There has been an interest among students for the purchase of a CNC plasma-cutting table. That interest was the result of a student evaluation survey. Torchmate, now owned by Lincoln electric offers a package, which includes the curriculum for teaching classes. Benefits would be program growth, sustainability, FTE generation and campus projects. On a side note, I recently judged ag/mech welding entries at our local fair and found three of the entrants had used a CNC cutting table in the construction of their projects.
- The student evaluation survey continues to state the need for better ventilation in the welding shop/booths. The evaluation also pointed out the need for improved lighting and stools/seats in the welding booths.

Other areas not equipment based

- Application to become an AWS Accredited Testing Facility (auditors travel expenses $2,300; on-site audit $4,260; equipment maintenance schedule $1,500 per year)
- An area that came up during my peer evaluation was the poor acoustics found in the classroom. Solution would be to carpet the room which is ≈ 12' wide by 30' in length.
- Increase the welding department budget ≈ $3000 in order to account for the increased use of consumables. Consumables include: shielding gas, tungsten, welding filler rod and solder. The increase is based on the addition of the 20+ gunsmith students each semester and the addition of the new welding for artist's class.

State of the Welding Program

Item: 2e – Expansion

The History

During the last advisory board meeting you learned of the welding departments expansion into the adjoining 2000 sq. ft. construction trades building. That expansion has included multiple electrical drops for shop equipment along with an existing air handler system that has been made operational. These were completed just prior to John Mulcahy's retirement. (Previous welding instructor)

I know that John Mulcahy had plans of making the new welding space a production shop, but I don't see that happening with its existing configuration. The biggest hurdle is the poor access to the space. There is a set of double doors to the front of the building and a single door to the rear. Most spaces that perform production work require roll up doors. Unfortunately this isn't viable without major modifications to the existing building. A better solution would be to use the space to increase our capacity by adding more welding booths.

Present

To date, we have increased our welding capacity by adding eight welding booths to this space. This was done to accommodate the new welding for gunsmiths course offerings: WT-31 and WT-32.

The Future

We have been fortunate enough to add more square footage to the welding program by way of the adjoining construction trades shop. With that in mind, what can't be improved upon is the existing infrastructure, primarily the electrical circuits. There is a finite amount, which is why new welding booths aren't set up to weld only one process. The space and limited number of circuits is too precious for that. Below are my recommendations.

- Fill the new space with multiple aisles of welding booths (limited by the number of electrical circuits available).
- Create a separate space within the shop where welding certifications are offered.
- Improve existing electrical drops (splitting circuits if possible) and extend them to welding booths.

The Future-Continued

- Improve upon or replace existing ventilation system for new welding booths.
- Remove existing construction trades equipment

State of the Welding Program

Item: 2f – Improvements

Other Projects and Improvements

Below is a list of other projects and improvements that have been completed since our last advisory board meeting.

- Moved classroom from upstairs to the location we're currently using. This space also includes a smart board that is used to show power-point presentations and provides access to the Internet to show videos.
- Constructed hoods over the welding booths in aisles 3 and 4 that include fluorescent lighting.
- Cleaned up and repaired welding booth tabletops in aisles 1-4 that were either warped or covered with layers of slag.
- Constructed a new cutting table with integrated track and plasma cutter and welding hood.
- Installed ducting for ventilation from the cutting table to an existing vent above.
- Constructed eight new welding booths to accommodate welding students from the gunsmith program.
- Constructed a manifold system to run the above eight welding booths from one Argon bottle.
- Moved existing metal rack from back wall of main welding shop to the old construction trade shop (new welding shop).
- Removed the four GTAW welding machines from aisle one to new location where metal rack was once located along west wall.
- Constructed four new welding booths and rack to accommodate the above GTAW machines.
- Had aisles one and two re-wired with quick connect plugs attached to a two-foot long pigtail. This allows for easy removal and interchangeability of equipment without having to call an electrician.
- Mounted wire feed machines above the welding booths in aisle one.
- Installed a manifold system for shielding gas to welding booths in aisle one and two. The manifold system is fed from a mixer that blends Argon and CO2 in any percentage desired.
- Overhauled the four welding booths in aisle two with a new design that are more spacious, more ergonomic, easy to clean and offer multiple welding processes.

Other Projects and Improvements-Continued

- Installed a new curtain arrangement in aisle one to provide protection to those inside and outside the welding booths.
- Moved storage shed out back to new location along side a previously moved shed.
- Modified a 20-foot dumpster by shortening it ten feet. It is now used for our main scrap–metal bin and provides easier collection for recycling.

Advertising

Item: 3a – Marketing

Below is spring 2014 and fall 2014 print ads that get placed in the Lassen Times two weeks prior to the start of classes. This semester the college is also running a new print ad advertising our new welding for artist's classes.

Lassen Community College
WELDING TECHNOLOGY

New Welding for Artists class starts this fall

Learn a Trade, Qualify, Earn a Degree or Enjoy a New Hobby

- **Job Placement Assistance**
- **Associate of Science Degree, Certificate of Achievement and Certificate of Accomplishment in Welding Technology**
- **A.W.S. Welding Qualification Tests on structural pipe and plate offered on campus**

For more information contact: Kory Konkol, Welding Instructor, Certified Welding Inspector, Certified Welding Educator. Phone: (530)251-8887 E-mail: kkonkol@lassencollege.edu

- **Discover or upgrade your welding skills in Oxyacetylene, GMAW (MIG), GTAW (TIG), SMAW (ARC), FCAW**
- **Advanced classes available in: Spray Transfer, Pulse Mig and Dual Shield**
- **Take just one class for fun**
- **Courses can be taken credit/no credit. Student projects are encouraged.**

Fall 2014 Classes Begin August 18th.
Register Today!!

Expand your creative side
with
Welding for Artists Classes

ART-50-M0111 Welding for Artists (The History of Welded Sculpture) with Randy Panfilio and WT-50-M0145 Welding for Artists (Design and Fabrication) with Kory Konkol.

ART-50 will be Monday evenings from 5:00-5:50pm.
WT-50 will be MW 6:00-8:50pm.

The two classes must be taken together for a total of 3 units. Courses start Monday, August 18th. Enroll now! www.lassencollege.edu 530-257-6181"

The two classes must be taken together for a total of 3 units
Courses start, Monday, August 18th

ENROLL NOW

www.lassencollege.edu or 253-257-6181

LCC
LASSEN COMMUNITY COLLEGE

Lassen College

from here, you can go anywhere

478-200 Hwy. 139, Susanville, CA 96130

Lassen Community College
WELDING TECHNOLOGY

Learn a Skill, Qualify, Earn a Degree or Enjoy a New Hobby

- **Job Placement Assistance**
- **Associate of Science Degree, Certificate of Achievement and Certificate of Accomplishment in Welding Technology**
- **A.W.S. Welding Qualification Tests on structural pipe and steel offered on campus**
- **Discover or upgrade your welding skills in Oxyacetylene, GMAW (MIG), GTAW (TIG), SMAW (ARC), FCAW**
- **Take just one class for fun**
- **Courses can be taken credit/no credit. Student projects are encouraged.**

For more information contact: Kory Konkol, Welding Instructor, Certified Welding Inspector, Certified Welding Educator 251-8887.

Spring 2014 Classes Begin January 13th.
Register Today!!

Advertising

Item: 3b - 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.

Spring of 2013 a scholarship was created to benefit and encourage potential welding students to pursue an A.S. degree in welding technology. Money would only be awarded upon completion of said degree. To date, we have raised roughly $3100 as a result of raffling off a wood splitter built by welding students. A secondary benefit was the exposure to the welding program leading up to the raffle. The splitter was on display in Plumas Bank for over a month, towed in the parade and displayed at the Lassen County Fair.

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.

The Lassen College welding program has been working with Wayne Suchorski, the Westwood High School welding instructor. So far, we've been able to host two one-day events for his students to come visit our program and do some welding. As a result, we are expecting to welcome one of his welding students this fall to LCC.

March of 2014 I visited Modoc and Surprise Valley High Schools' welding departments. During the visit, I was able to talk with students about our program and demonstrate the GTAW process with equipment that was brought from LCC. As a result, we are expecting to welcome two of his welding students this fall to LCC.

Through Lassen College's outreach coordinator, a Discover Lassen College day event took place in February of 2014. The event hosted eighth graders from around Lassen County. The welding program had a hands on display where gas tungsten arc welding (GTAW) was performed in real time for all to see and without the need of a welding helmet. This was possible from the design of a custom made display.

Recruiting/Outreach - Continued

Other outreach consists of visiting Lassen High School each semester to talk about our program and its opportunities. In addition, the LCC'S welding shop has been used for practice by competing ag/mech students.

In closing, the results of our labor go unknown, because they rarely come to fruition right away. There is always room for improvement and I would like to ask the committee for suggestions in the area of recruitment. Something to remember is that we're not the only game in town.

Recommendations
Item: 4
Topics for Your Consideration
Discussion and Vote

Are we offering enough of the types of classes necessary to meet industry requirements and demands? Things to consider: Types of welding electrodes, welding/cutting processes, welding positions, plate or pipe, material - aluminum/stainless steel. (Refer to 2b)

Agree ☐ Disagree ☐

Recommendation –

Among the degrees and certificates offered, the only recommendation is to remove WT-22 and WT-23 from the one-year certificate of achievement. By removing the two classes, a student will be able to complete the one-year certificate in one year. (Refer to 2b)

Agree ☐ Disagree ☐

Recommendation -

Do you believe that the current course offerings are meeting the needs of our students? Please provide suggestions. (Refer to 2b)

Agree ☐ Disagree ☐

Recommendation –

Does our current class schedule (days and times) reflect the needs of our students? (Refer to 2c)

Agree ☐ Disagree ☐

Recommendation –

Equipment recommendations (Refer to 2d)

Agree ☐ Disagree ☐

Recommendation -

Members of the advisory board, please advise of any suggestions or changes that you would like to see regarding the print ad or other marketing tools that may be utilized. (Refer to 2c)

Agree ☐ Disagree ☐

Recommendation -

Members of the advisory board please read my recommendations under 2e and advise of any suggestions or changes that you would like to see regarding this space.

Agree ☐ Disagree ☐

Recommendation -

In the area of recruiting and outreach, (3b) do you believe we are reaching all of our potential students? Please offer suggestions or recommendations.

Agree ☐ Disagree ☐

Recommendation -

Signature_____ Date_____

Print_____

E-mail_____

Recommendations
Item: 4
Topics for Your Consideration
Discussion and Vote

Are we offering enough of the types of classes necessary to meet industry requirements and demands? Things to consider: Types of welding electrodes, welding/cutting processes, welding positions, plate or pipe, material - aluminum/stainless steel. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation –

Among the degrees and certificates offered, the only recommendation is to remove WT-22 and WT-23 from the one-year certificate of achievement. By removing the two classes, a student will be able to complete the one-year certificate in one year. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation - this will increase retention and certificate obtained percentage.

Do you believe that the current course offerings are meeting the needs of our students? Please provide suggestions. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation – Excellent selection

Does our current class schedule (days and times) reflect the needs of our students? (Refer to 2c)

Agree ☒ Disagree ☐

Recommendation – Excellent selection

Recommendations
Item: 4
Topics for Your Consideration
Discussion and Vote

Are we offering enough of the types of classes necessary to meet industry requirements and demands? Things to consider: Types of welding electrodes, welding/cutting processes, welding positions, plate or pipe, material - aluminum/stainless steel. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation –

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Agree ☒ Disagree ☐

Recommendation -

Do you believe that the current course offerings are meeting the needs of our students? Please provide suggestions. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation –

Does our current class schedule (days and times) reflect the needs of our students? (Refer to 2c)

Agree ☒ Disagree ☐

Recommendation –

Recommendations
Item: 4
Topics for Your Consideration
Discussion and Vote

Are we offering enough of the types of classes necessary to meet industry requirements and demands? Things to consider: Types of welding electrodes, welding/cutting processes, welding positions, plate or pipe, material - aluminum/stainless steel. (Refer to 2b)

Agree ☑ Disagree ☐

Recommendation –
Expand the pipe welding to the mig process with positioners.

Among the degrees and certificates offered, the only recommendation is to remove WT-22 and WT-23 from the one-year certificate of achievement. By removing the two classes, a student will be able to complete the one-year certificate in one year. (Refer to 2b)

Agree ☑ Disagree ☐

Recommendation -

Do you believe that the current course offerings are meeting the needs of our students? Please provide suggestions. (Refer to 2b)

Agree ☑ Disagree ☐

Recommendation –

Does our current class schedule (days and times) reflect the needs of our students? (Refer to 2c)

Agree ☑ Disagree ☐

Recommendation –

Recommendations
Item: 4
Topics for Your Consideration
Discussion and Vote

Are we offering enough of the types of classes necessary to meet industry requirements and demands? Things to consider: Types of welding electrodes, welding/cutting processes, welding positions, plate or pipe, material - aluminum/stainless steel. (Refer to 2b)

Agree ☑ Disagree ☐

Recommendation –

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Agree ☑ Disagree ☐

Recommendation -

Do you believe that the current course offerings are meeting the needs of our students? Please provide suggestions. (Refer to 2b)

Agree ☑ Disagree ☐

Recommendation –

Does our current class schedule (days and times) reflect the needs of our students? (Refer to 2c)

Agree ☑ Disagree ☐

Recommendation –

Recommendations
Item: 4
Topics for Your Consideration
Discussion and Vote

Are we offering enough of the types of classes necessary to meet industry requirements and demands? Things to consider: Types of welding electrodes, welding/cutting processes, welding positions, plate or pipe, material - aluminum/stainless steel. (Refer to 2b)

Agree ☐ Disagree ☒

Recommendation –

Among the degrees and certificates offered, the only recommendation is to remove WT-22 and WT-23 from the one-year certificate of achievement. By removing the two classes, a student will be able to complete the one-year certificate in one year. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation -

Do you believe that the current course offerings are meeting the needs of our students? Please provide suggestions. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation –

Does our current class schedule (days and times) reflect the needs of our students? (Refer to 2c)

Agree ☒ Disagree ☐

Recommendation –

Recommendations
Item: 4
Topics for Your Consideration
Discussion and Vote

Are we offering enough of the types of classes necessary to meet industry requirements and demands? Things to consider: Types of welding electrodes, welding/cutting processes, welding positions, plate or pipe, material - aluminum/stainless steel. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation –

Among the degrees and certificates offered, the only recommendation is to remove WT-22 and WT-23 from the one-year certificate of achievement. By removing the two classes, a student will be able to complete the one-year certificate in one year. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation -

Do you believe that the current course offerings are meeting the needs of our students? Please provide suggestions. (Refer to 2b)

Agree ☒ Disagree ☐

Recommendation –
Layout & Rigging classes.

Does our current class schedule (days and times) reflect the needs of our students? (Refer to 2c)

Agree ☒ Disagree ☐

Recommendation –

Equipment recommendations (Refer to 2d)

Agree ☑ Disagree ☐

Recommendation -

Members of the advisory board, please advise of any suggestions or changes that you would like to see regarding the print ad or other marketing tools that may be utilized. (Refer to 2c)

Agree ☑ Disagree ☐

Recommendation -

Members of the advisory board please read my recommendations under 2e and advise of any suggestions or changes that you would like to see regarding this space.

Agree ☑ Disagree ☐

Recommendation -

In the area of recruiting and outreach, (3b) do you believe we are reaching all of our potential students? Please offer suggestions or recommendations.

Agree ☑ Disagree ☐

Recommendation -
SET UP DATA BASE AS TO WHERE STUDENT FOUND OUT ABOUT LCC WELDING - FOCUS ON WHAT WORKED - Use for Recruit tool.

Signature Bob Bengard Date 7/24/14

Print BOB BENGARD

Appendix:

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Course Catalog Welding Degrees/Certificates

Welding Technology

DEGREE

Associate in Science in Welding Technology

CERTIFICATES OF ACHIEVEMENT

Welding Technology Two-Year Plan
Welding Technology One-Year Plan

CERTIFICATE OF ACCOMPLISHMENT

Welding Technology

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 w/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 Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 22	Power Plants and Field Pipe Welding III	3.0
WT 23	Power Plants 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: Metal Arc Welding	3.0
WT 39	Welding Theory and Practice: Gas Tungsten Arc Welding	3.0

Required Electives: 18 Units

Course No	Course Title	Units
BUS 2	Introduction to Business	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

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, DI.1.

Certificate of Achievement: Welding Technology - Two Year

Total Units for the Two-Year Certificate of Achievement: 53 Units
Required Core Courses: 35 Units

Course No	Course Title	Units
ENGL	English Composition Course	3.0
MATH 60	Intermediate Algebra	4.0
IT 22	Operations Maintenance and Safety	1.0
IT 72	Facilities Maintenance: Welding	2.0
WT 20	Power Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 22	Power Plants and Field Pipe Welding III	3.0
WT 23	Power Plants 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: Metal Arc Welding	3.0
WT 39	Welding Theory and Practice: Gas Tungsten Arc Welding	3.0

Required Electives: 18 Units

Course No	Course Title	Units
BUS 2	Introduction to Business	3.0
CA 31	Computer Applications I	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

Program Student Learning Outcomes

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

2. 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: 32 Units
Required Core Courses: 29 Units

Course No	Course Title	Units
ENGL	English Composition Course	3.0
MATH 60	Intermediate Algebra	4.0
IT 22	Operations Maintenance and Safety	1.0
IT 72	Facilities Maintenance: Welding	2.0
WT 20	Power Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 22	Power Plants and Field Pipe Welding III	3.0
WT 23	Power Plants 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

Required Electives: 3 Units

Course No	Course Title	Units
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

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: 15 Units
Required Core Courses: 15 Units

Course No	Course Title	Units
IT 22	Operations Maintenance and Safety	1.0
IT 72	Facilities Maintenance: Welding	2.0
WT 20	Power Plants and Field Pipe Welding I	3.0
WT 21	Power Plants and Field Pipe Welding II	3.0
WT 36	Welding Theory and Practice: Oxyacetylene	3.0
WT 37	Welding Theory and Practice: Shielded Metal Arc Welding	3.0

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.

Appendix:

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FTE Data provided by the Office of Instruction

WT Welding Technology

Revenue Sources:	FTES	% Total	$/FTES	Amount	% Total
FT Credit FTES	8.48	26.6 %	$4,663.2895	$39,553.11	23.3 %
FT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
PT Credit FTES	7.27	22.8 %	$4,663.2895	$33,924.26	20.0 %
PT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Other Credit FTES	16.18	50.7 %	$4,663.2895	$75,451.13	44.5 %
Other Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Total FTES	**31.94**			$148,928.52	87.9 %
Grants					0.0 %
Other Revenue				$20,472.00	12.1 %
Total Revenue:	**31.94**	100%		$169,400.52	100%

Uses of Resources (costs):

11_000_780_1_095650 (Vocational - Welding Tech)

51100	FT Instructional Salaries	$52,659.81
51300	P/T Certificated	$5,261.94
51330	Intersession/Summer	$10,372.79
51399	F/T Certif Overloads	$31,947.73
	51 Certificated Salaries Total:	$100,242.27
52200	Instructional Aides	$19,090.26
52299	Faculty Support Overtime	$690.86
	52 Classified Salaries Total:	$19,781.12
53100	STRS-Parent Acct	$0.00
53130	STRS-Instructional	$7,522.49
53140	STRS-Non-Instructional	$557.60
53200	PERS-Parent Acct	$0.00
53230	PERS-Instructional	$2,044.07
53300	OASDI-Parent Acct	$0.00
53330	OASDI-Instructional	$1,097.83
53400	Health Ins-Parent Acct	$0.00
53430	Health Ins-Instructional	$21,794.48
53500	UI-Parent Acct	$0.00
53530	UI-Instructional	$897.32
53540	UI-Non-Instructional	$26.25
53600	Wrk Comp-Parent Acct	$0.00
53630	Wrk Comp-Instructional	$3,526.85
53640	Wrk Comp-Non-Instructional	$209.28
53800	Medicare-Parent Acct	$0.00

53830	Medicare-Instructional	$1,611.70
53840	Medicare-Non-Instructional	$98.60
	53 Benefits Total:	$39,386.47
54300	Supplies	$23,446.57
54400	Duplicating	$48.84
	54 Supplies and Materials Total:	$23,495.41
55800	Postage	$0.44
	55 Other Operating Expenses and Services Total:	$0.44
	11_000_780_1_095650 Total:	**$182,905.71**
Total Cost:		**$182,905.71**
Gross Contribution to Overhead (GCO = Total Revenue - Total Cost):		**($13,505.19)**
Contribution to District per Dollar of Revenue (CTD = CGO / Total Cost):		**-0.07**

2010 - 2011

IT Industrial Technology

Revenue Sources:	FTES	% Total	$/FTES	Amount	% Total
FT Credit FTES	6.52	89.2 %	$4,663.2895	$30,404.65	89.2 %
FT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
PT Credit FTES	0.79	10.8 %	$4,663.2895	$3,677.34	10.8 %
PT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Other Credit FTES	0.00	0.0 %	$4,663.2895	$0.00	0.0 %
Other Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Total FTES	**7.31**			$34,081.99	100.0 %
Grants					0.0 %
Other Revenue					0.0 %
Total Revenue:	**7.31**	100%		$34,081.99	100%

Uses of Resources (costs):

11_000_780_1_095600 (Vocational - Industrial & Mfg Technology)

51100	FT Instructional Salaries	$1,459.10
51300	P/T Certificated	($282.62)
51399	F/T Certif Overloads	$3,177.15
	51 Certificated Salaries Total:	$4,353.63
53100	STRS-Parent Acct	$0.00
53130	STRS-Instructional	$259.55
53400	Health Ins-Parent Acct	$0.00
53430	Health Ins-Instructional	$450.85
53500	UI-Parent Acct	$0.00
53530	UI-Instructional	$15.75
53600	Wrk Comp-Parent Acct	$0.00
53630	Wrk Comp-Instructional	$7,287.70
53800	Medicare-Parent Acct	$0.00
53830	Medicare-Instructional	$67.22
	53 Benefits Total:	$8,081.07
	11_000_780_1_095600 Total:	**$12,434.70**

Total Cost:	**$12,434.70**
Gross Contribution to Overhead (GCO = Total Revenue - Total Cost):	**$21,647.29**
Contribution to District per Dollar of Revenue (CTD = CGO / Total Cost):	**1.74**

2011-2012

WT Welding Technology

Revenue Sources:	FTES	% Total	$/FTES	Amount	% Total
FT Credit FTES	11.60	37.3 %	$4,564.8250	$52,951.90	37.3 %
FT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
PT Credit FTES	2.90	9.3 %	$4,564.8250	$13,216.25	9.3 %
PT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Other Credit FTES	16.61	53.4 %	$4,564.8250	$75,812.61	53.4 %
Other Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Total FTES	**31.10**			$141,980.76	100.0 %
Grants					0.0 %
Other Revenue					0.0 %
Total Revenue:	**31.10**	100%		$141,980.76	100%

Uses of Resources (costs):

11_000_780_1_095650 (Vocational - Welding Tech)

51100	FT Instructional Salaries	$53,106.09
51399	F/T Certif Overloads	$20,064.49
	51 Certificated Salaries Total:	$73,170.58
52200	Instructional Aides	$18,912.39
52299	Faculty Support Overtime	$782.98
	52 Classified Salaries Total:	$19,695.37
53100	STRS-Parent Acct	$0.00
53130	STRS-Instructional	$5,454.63
53140	STRS-Non-Instructional	($557.60)
53200	PERS-Parent Acct	$0.00
53230	PERS-Instructional	$2,002.21
53300	OASDI-Parent Acct	$0.00
53330	OASDI-Instructional	$1,083.73
53400	Health Ins-Parent Acct	$0.00
53430	Health Ins-Instructional	$21,412.32
53500	UI-Parent Acct	$0.00
53530	UI-Instructional	$1,851.35
53540	UI-Non-Instructional	($26.25)
53600	Wrk Comp-Parent Acct	$0.00
53630	Wrk Comp-Instructional	$3,212.48
53640	Wrk Comp-Non-Instructional	($209.28)
53800	Medicare-Parent Acct	$0.00
53830	Medicare-Instructional	$1,399.61

53840	Medicare-Non-Instructional	($98.60)
	53 Benefits Total:	$35,524.60
54300	Supplies	$23,492.18
54400	Duplicating	$86.08
	54 Supplies and Materials Total:	$23,578.26
55800	Postage	$0.45
	55 Other Operating Expenses and Services Total:	$0.45
	11_000_780_1_095650 Total:	**$151,969.26**
Total Cost:		**$151,969.26**
Gross Contribution to Overhead (GCO = Total Revenue - Total Cost):		**($9,988.50)**
Contribution to District per Dollar of Revenue (CTD = CGO / Total Cost):		**-0.07**

IT Industrial Technology

Revenue Sources:	FTES	% Total	$/FTES	Amount	% Total
FT Credit FTES	2.13	43.3 %	$4,564.8250	$9,717.42	43.3 %
FT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
PT Credit FTES	2.79	56.7 %	$4,564.8250	$12,729.34	56.7 %
PT Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Other Credit FTES	0.00	0.0 %	$4,564.8250	$0.00	0.0 %
Other Non-Credit FTES	0.00	0.0 %	$2,744.9578	$0.00	0.0 %
Total FTES	**4.92**			$22,446.76	100.0 %
Grants					0.0 %
Other Revenue					0.0 %
Total Revenue:	**4.92**	100%		$22,446.76	100%

Uses of Resources (costs):

11_000_780_1_095600 (Vocational - Industrial & Mfg Technology)

51100	FT Instructional Salaries	$2,939.90
51399	F/T Certif Overloads	$7,100.72
	51 Certificated Salaries Total:	$10,040.62
53100	STRS-Parent Acct	$0.00
53130	STRS-Instructional	$717.09
53400	Health Ins-Parent Acct	$0.00
53430	Health Ins-Instructional	$858.82
53500	UI-Parent Acct	$0.00
53530	UI-Instructional	$88.05
53600	Wrk Comp-Parent Acct	$0.00
53630	Wrk Comp-Instructional	$311.77
53800	Medicare-Parent Acct	$0.00
53830	Medicare-Instructional	$144.62
	53 Benefits Total:	$2,120.35
	11_000_780_1_095600 Total:	**$12,160.97**
Total Cost:		**$12,160.97**
Gross Contribution to Overhead (GCO = Total Revenue - Total Cost):		**$10,285.79**
Contribution to District per Dollar of Revenue (CTD = CGO / Total Cost):		**0.85**

Appendix:

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Welding Technology Program Class Schedules

Instructor Name: Kory Konkol –WELDING Semester: Fall 2013

OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am – 9 am						
9 am – 10 am	WT 36-39 WT 40-45 Lab Konkol		WT 36-39 WT 40-45 Lab 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		WT 36-39 WT 40-45 Lab			
1 pm – 2 pm	WT 36-39 WT 40-45 Lab		WT 36-39 WT 40-45 Lab			
2 pm – 3 pm	WT 36-39 WT 40-45 Lab		WT 36-39 WT 40-45 Lab			
3 pm – 4 pm	WT 36-39 WT 40-45 Lab		WT 36-39 WT 40-45 Lab			
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 36-39 WT 40-45 Lab 5:30 [redacted]	WT 20 Lec 5:00-5:50 Konkol	WT 36-39 WT 40-45 Lab 5:30 [redacted]	WT 21 Lec 5:00-5:50 Konkol		
6 pm – 7 pm	WT 31 6:00-7:00 Lecture Konkol	WT 20-23 Lab 6:00-8:50	WT 31 6:00-9:20 Lab Konkol	WT 20-23 Lab 6:00-8:50		
7 pm – 8 pm	WT 31 Lab 7:00-9:20	WT 20-23 Lab	WT 31 Lab	WT 20-23 Lab		
8 pm – 9 pm	WT 31 Lab	WT 20-23 Lab 8:50	WT 31 Lab	WT 20-23 Lab 8:50		
9 pm – 10 pm	WT 31 Lab	[redacted]	WT 31 Lab	[redacted]		

Instructor Name: Kory Konkol –WELDING Semester: Fall 2012

OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am – 9 am						
9 am – 10 am	Open Lab 9-1 Konkol		Open Lab 9-1 Konkol			
10 am – 11 am	Open Lab 9-1		Open Lab 9-1			
11 am – 12 pm	Open Lab 9-1		Open Lab 9-1			
12 pm – 1 pm	Open Lab 9-1	IT-72 8/21 – 12/21 12:00-2:50 Konkol	Open Lab 9-1	IT 72 8/21 – 12/21 12:00-2:50 Konkol		
1 pm – 2 pm	WT36-39 Lab Konkol 1:00-5:30	IT 72	WT 36-39 Lab Konkol 1:00-5:30	IT 72		
2 pm – 3 pm	WT 36-39 Lab	IT 72	WT 36-39 Lab	IT 72		
3 pm – 4 pm	WT 36-39 Lab		WT 36-39 Lab			
4 pm – 5 pm	WT 36-39 Lab	WT 22 Lec 4:00-4:50 Konkol	WT 36-39 Lab	WT 23 Lec 4:00-4:50 Konkol		
5 pm – 6 pm	WT 36-39 Lab 5:30 [redacted]	WT 20 Lec 5:00-5:50 Konkol	WT 36-39 Lab 5:30 [redacted]	WT 21 Lec 5:00-5:50 Konkol		
6 pm – 7 pm	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50		
7 pm – 8 pm	WT 40-45 Lab	WT 20-23 Lab	WT 40-45 Lab	WT 20-23 Lab		
8 pm – 9 pm	WT 40-45 Lab	WT 20-23 Lab 8:50	WT 40-45 Lab	WT 20-23 Lab 8:50		
9 pm – 10 pm	WT 40-45 Lab	[redacted]	WT 40-45 Lab	[redacted]		

Instructor Name: Kory Konkol –WELDING **Semester:** Spring 2012
OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am – 9 am						
9 am – 10 am	Open Lab 9-1 Konkol		Open Lab 9-1 Konkol		Open Lab 9-1 Konkol	Open Lab 9-1 Rulofson
10 am – 11 am	Open Lab 9-1	IT-22 1/24 – 3/8 9:45-10:50 Konkol	Open Lab 9-1	IT-22 1/24 – 3/8 9:45-10:50 Konkol	Open Lab 9-1	Open Lab 9-1
11 am – 12 pm	Open Lab 9-1	IT-22	Open Lab 9-1	IT-22	Open Lab 9-1	Open Lab 9-1
12 pm – 1 pm	Open Lab 9-1	IT-72 1/17 – 5/25 12:00-2:50 Konkol	Open Lab 9-1	IT 72 1/17 – 5/25 12:00-2:50 Konkol	Open Lab 9-1	Open Lab 9-1
1 pm – 2 pm	WT36-39 Lab Konkol 1:00-5:30	IT 72	WT 36-39 Lab Konkol 1:00-5:30	IT 72		
2 pm – 3 pm	WT 36-39 Lab	IT 72	WT 36-39 Lab	IT 72		
3 pm – 4 pm	WT 36-39 Lab		WT 36-39 Lab			
4 pm – 5 pm	WT 36-39 Lab	WT 22 Lec 4:00-4:50 Konkol	WT 36-39 Lab	WT 23 Lec 4:00-4:50 Konkol		
5 pm – 6 pm	WT 36-39 Lab 5:30 [redacted]	WT 20 Lec 5:00-5:50 Konkol	WT 36-39 Lab 5:30 [redacted]	WT 21 Lec 5:00-5:50 Konkol		
6 pm – 7 pm	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50		
7 pm – 8 pm	WT 40-45 Lab	WT 20-23 Lab	WT 40-45 Lab	WT 20-23 Lab		
8 pm – 9 pm	WT 40-45 Lab	WT 20-23 Lab 8:50	WT 40-45 Lab	WT 20-23 Lab 8:50		
9 pm – 10 pm	WT 40-45 Lab	[redacted]	WT 40-45 Lab	[redacted]		

Instructor Name: Kory Konkol –WELDING Semester: Fall 2011
OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am – 9 am						
9 am – 10 am	Open Lab 9-1 Konkol		Open Lab 9-1 Konkol		Open Lab 9-1 Konkol	Open Lab 9-1 Rulofson
10 am – 11 am	Open Lab 9-1	PGT 22 9/20 – 10/27 10:00-11:15 Konkol	Open Lab 9-1	PGT 22 9/20 – 10/27 10:00-11:15 Konkol	Open Lab 9-1	Open Lab 9-1
11 am – 12 pm	Open Lab 9-1	PGT 22	Open Lab 9-1	PGT 22	Open Lab 9-1	Open Lab 9-1
12 pm – 1 pm	Open Lab 9-1	IT 72 8/18 – 12/23 12:00-2:50 Konkol	Open Lab 9-1	IT 72 8/18 – 12/23 12:00-2:50 Konkol	Open Lab 9-1	Open Lab 9-1
1 pm – 2 pm	WT36-39 Lab Konkol 1:00-5:30	IT 72	WT 36-39 Lab Konkol 1:00-5:30	IT 72		
2 pm – 3 pm	WT 36-39 Lab	IT 72	WT 36-39 Lab	IT 72		
3 pm – 4 pm	WT 36-39 Lab		WT 36-39 Lab			
4 pm – 5 pm	WT 36-39 Lab	WT 22 Lec 4:00-4:50 Konkol	WT 36-39 Lab	WT 23 Lec 4:00-4:50 Konkol		
5 pm – 6 pm	WT 36-39 Lab 5:30 [redacted]	WT 20 Lec 5:00-5:50 Konkol	WT 36-39 Lab 5:30 [redacted]	WT 21 Lec 5:00-5:50 Konkol		
6 pm – 7 pm	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50		
7 pm – 8 pm	WT 40-45 Lab	WT 20-23 Lab	WT 40-45 Lab	WT 20-23 Lab		
8 pm – 9 pm	WT 40-45 Lab	WT 20-23 Lab 8:50	WT 40-45 Lab	WT 20-23 Lab 8:50		
9 pm – 10 pm	WT 40-45 Lab	[redacted]	WT 40-45 Lab	[redacted]		

Instructor Name: Kory Konkol –WELDING Semester: Spring 2011
OFFICE NUMBER TR203A

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
8 am – 9 am						
9 am – 10 am	Open Lab 9-1 Konkol		Open Lab 9-1 Konkol		Open Lab 9-1 Konkol	Open Lab 9-1 Rulofson
10 am – 11 am	Open Lab 9-1	PGT 22 3/8 - 4/28 10:30-11:40 Konkol	Open Lab 9-1	PGT 22 3/8 - 4/28 10:30-11:40 Konkol	Open Lab 9-1	Open Lab 9-1
11 am – 12 pm	Open Lab 9-1	PGT 22	Open Lab 9-1	PGT 22	Open Lab 9-1	Open Lab 9-1
12 pm – 1 pm	Open Lab 9-1	IT 72 1/18 - 5/26 12:00-2:50 Konkol	Open Lab 9-1	IT 72 1/18 - 5/26 12:00-2:50 Konkol	Open Lab 9-1	Open Lab 9-1
1 pm – 2 pm	WT36-39 Lab Konkol 1:00-5:30	IT 72	WT 36-39 Lab Konkol 1:00-5:30	IT 72		
2 pm – 3 pm	WT 36-39 Lab	IT 72	WT 36-39 Lab	IT 72		
3 pm – 4 pm	WT 36-39 Lab		WT 36-39 Lab			
4 pm – 5 pm	WT 36-39 Lab	WT 22 Lec 4:00-4:50 Konkol	WT 36-39 Lab	WT 23 Lec 4:00-4:50 Konkol		
5 pm – 6 pm	WT 36-39 Lab 5:30 [redacted]	WT 20 Lec 5:00-5:50 Konkol	WT 36-39 Lab 5:30 [redacted]	WT 21 Lec 5:00-5:50 Konkol		
6 pm – 7 pm	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50	WT 40-45 5:30-9:55 Rulofson	WT 20-23 Lab 6:00-8:50		
7 pm – 8 pm	WT 40-45 Lab	WT 20-23 Lab	WT 40-45 Lab	WT 20-23 Lab		
8 pm – 9 pm	WT 40-45 Lab	WT 20-23 Lab 8:50	WT 40-45 Lab	WT 20-23 Lab 8:50		
9 pm – 10 pm	WT 40-45 Lab	[redacted]	WT 40-45 Lab	[redacted]		

Accredited Testing Facility (ATF) Program Information

(The enclosed documents provide information about the AWS Accredited Test Facility Program.)

Table of Contents

(Please scroll down to view all documents or click on the document name.)

Technical Documents

(These documents are available for downloading at the AWS website.
Please click on the document name and you will be redirected to the AWS Website.)

- **QC4-89, Standard for Accreditation of Test Facilities for AWS Certified Welder Program**
- **QC7-93, Standard for AWS Certified Welders**
  - **Supplement C- Welder Performance Qualification Sheet Metal Test Requirements**
  - **Supplement F- Chemical Plant and Petroleum Refinery Piping**
  - **Supplement G- AWS Performance Qualification Test**
- **B5.4-2005, Specification for the Qualification of Welder Test Facilities**

Steps to Becoming an ATF

1. Complete the following documents:
   - ATF Application
   - One uncontrolled copy of your facility's Quality Assurance Manual
   - QA Manual checklist*
   - On-Site Audit checklist*
   - Application Fee or P.O. Request

   Important Note: Be sure to read the requirements on the QA Manual Checklist and On-site Audit Checklist as they contain more detailed information on what is required for your QA Manual.

   Mail these completed documents to: American Welding Society Attn: Emil Pagoaga AWS Certification Department 550 N.W. LeJeune Road Miami, FL 33126

2. Following a satisfactory review of the facility's application, checklists and Quality Assurance Manual, an invoice for the applicable fees will be issued to the facility. Please click on the following link to view the current program fees: http://www.aws.org/certification/docs/schedules.html

3. Program fees, along with a copy of the invoice must be mailed to:

   American Welding Society Attn: Certification Department 550 N.W. LeJeune Road Miami, FL 33126

4. Once the program fees have been received, AWS will schedule an on-site audit of your facility by a third-party auditor.

5. When the audit is completed, the facility will receive notification of their results -- including any deficiencies requiring corrective action, and a final invoice will be issued to the facility for travel expenses incurred by the third-party auditor.

6. If the audit results are satisfactory, a certificate of conformance will be issued. The certificate allows your facility to operate in accordance with the AWS QC4-89, Standard for Accreditation of Test Facilities for the AWS Certified Welder Program.

Accredited Test Facility

Initial On-Site Audit Application

American Welding Society
550 NW LeJeune Road
Miami, FL 33126
(800 or 305)-443-9353, Ext 448
Fax (305) 443-6445

We hereby request the American Welding Society accredit the following facility as a participant in the AWS Certified Welder Program in accordance with the provisions of AWS QC4-89, *Standard for Accreditation of Test Facilities for AWS Certified Welder Program.*

APPLICANT INFORMATION

Name of Facility: _____

Facility Representative: _____

Test Supervisor(s): 1) _____ 2) _____

Corporate or Mailing Address:

Street Address: _____

City: _____ State: _____ Zip: _____

Country: _____

Testing Facility Address (If different from corporate address):

Street Address: _____

City: _____ State: _____ Zip: _____

Country: _____

Testing Facility's Contact Information:

Phone: ( ) _____ Ext: _____ Fax: ( ) _____

Email: _____

Website: _____

Accredited Test Facility

Initial On-Site Audit Application

ON-SITE AUDIT

Please allow 4-6 weeks for On-Site Audit scheduling.

Preferred Audit Dates: 1) _____ 2) _____

3) _____ 4) _____

APPLICATION FEES

☐ **Initial On-site Audit (North American Fee Schedule)*** **Fee: $2,300 USD****

**** Requires QAM and, a completed ATF Quality Manual & On-site Audit Checklists.***

***** Auditor's travel, lodging and meal expenses will be invoiced to the ATF after the audit.***

☐ **Initial On-site Audit (International Fee Schedule)*** **Fee: $1,300 USD****

**** Requires QAM and, a completed ATF Quality Manual & On-Site Audit Checklists.***

***** Auditor's fees and travel, lodging and meal expenses will be invoiced to the ATF after the audit.***

ENCLOSED MATERIALS

Quality Assurance Manual: Enclosed ☐

ATF Quality Manual & Audit Checklists: Enclosed ☐

List any past or present certifications: _____

Contact Name (Print): _____ **Date:** _____

Signature: _____ **Title:** _____

METHOD OF PAYMENT

☐ Check # _____ ☐ Bill P.O. **(Staple P.O. to front page of application)**

☐ Visa ☐ Master Card ☐ American Express ☐ Diners Club ☐ Discover

Credit Card #: | | | | | | | | | | | | | | | | Exp. Date: | | | | | | |

Signature: _____

AWS USE ONLY

Date Received:	Account #:	Amount: ☐ $2,300.00 (North American Fee Schedule) ☐ $1,300.00 (International Fee Schedule)

Accredited Test Facility

Initial On-Site Audit Application

On-Site Audit Checklist Questions Part I to XII

(Important Note: Be sure to read the requirements on the Checklist as they contain more detailed information on what is required for your QA Manual.)

Instructions: Please answer questions 1 through 18 in the Q. A. M. Index section with the corresponding page or section number of your Quality Assurance Manual. Example:

Part II – Personnel Questions 1 to 10	Y	N	Q. A. M. Index Section #
1) Are the inspection and testing services of the Test Facility under the authority of a technical manager?			Section # 14.3

Part I – Procedures Questions 1 to 3	Y	N	Q. A. M. Index Section #
1) Procedure for procurement of materials including filler metals.			
a) Is there a written procedure?			
b) Does it include a sample purchase order?			
c) Does the P.O. require material test reports on base metal and certificates conformance on filler metals?			
d) Is the material and certifications checked on receipt?			
e) Are the mill test reports and certificates of conformance on file?			
2) Initial discussions with candidate for the certified welders Program.			
a) Is a sample application available?			
b) Is it filled out so that it may be used as a sample?			
c) Is the welder advised of the testing procedures including safety rules, fit up tolerances, and testing requirements?			
3) Please describe in a separate sheet of paper the procedure for traceability of materials. Begin with use of certified materials through welding of test coupons and visual examination, mechanical or radiographic testing, and recording of results.			
a) Is the candidate welder assigned an identification code?			
b) Is the identification code recorded on the coupon and the paper work?			
c) Does the Test Supervisor verify that certified materials are used?			
d) Is the test materials identification recorded on the test records?			
e) Is the welder identification code transferred to the bend specimens?			
f) Is the welder identification code shown on the x-ray film when radiography is used?			

Part II – Personnel Questions 1 to 10	Y	N	Q. A. M. Index Section #
1) Are the inspection and testing services of the Test Facility under the authority of a technical manager?			
2) Does the technical manager have at least 5 years technical experience in inspection and testing of metals or welding?			
3) Who is the Facility Representative?			
4) Are the Test Supervisors employees or contractors?			
5) Are they currently certified as CWIs under AWS QC 1?			
a) List the Test Supervisors and their Certificate numbers:			
6) If radiography is used, are the NDE personnel employees or contractors?			
7) Is ASNT Recommended Practice SNT-TC-1A followed in the qualification of NDE personnel?			
8) Are NDE results interpreted by a certified technician?			
9) Are job descriptions or job duties available for the positions described in QC4 and the organizational chart?			
10) Who performs function of "Quality Assurance Manager"?			

Accredited Test Facility

Initial On-Site Audit Application

Part III – Operations Questions 1 to10	Y	N	Q. A. M. Index Section #
1) Are written instructions and sketches available for the candidate to use in fitting the test assembly?			
2) Is the fit up inspected prior to welding? How is it documented?			
3) Are the Welding Procedures available for use by the candidate?			
4) Are written procedures or checklists available for preparation and inspection of bend specimens?			
5) Are written procedures or checklists available for testing and evaluation of bend specimens?			
6) Are radiographic acceptance criteria available to the radiographic interpreter?			
7) Are the results of the bend test or film interpretation recorded on the test records?			
8) Does the welders file consist of:			
a) The welders initial application?			
b) The welder test checklist?			
c) The bend test report or the radiographic and the radiographers report?			
d) The Performance Qualification Test Record?			
9) If welders are to be tested off site, is it covered in the QA manual?			
10) How are outside testing activities controlled?			
Part IV - Reference Documents Questions 1 to 3	**Y**	**N**	**Q. A. M. Index Section #**
1) Does the Test Facility maintain a library?			
2) Are there current copies of applicable Welder Qualification Codes and Standards?			
3) Does the library contain the following mandatory documents?			
a) Cert-CW-Certified Welder Application			
b) ATF WPQR Blank Form			
c) Cert-Maintenance of Welder Certification			
Qualification and Certification	**Y**	**N**	**Q. A. M. Index Section #**
AWS QC 1 Standard for Certification of Inspectors			
AWS QC 4 Standard for Accreditation of Test Facilities for AWS Certified Welder Program			
AWS QC 7 Standard for AWS Certified Welders (and applicable supplements)			
AWS Supplement G, AWS Performance Qualification Test			
Welding Procedure Specifications (WPS*)	**Y**	**N**	**Q. A. M. Index Section #**
1) Does the Test Facility maintain a list of WPSs/PQRs used for the testing of welders?			
2) Are there copies of the applicable WQTR or WPQR in the Welder's record?			
3) Are the WQTR or WPQR properly filled out?			
4) Does the library contain copies of all the WPSs/PQRs?			
5) Does the Welding Supervisor (CWI) understand these documents?			

Specification Key:

WPS= Welding Procedure Specifications
PQR= Procedure Qualification Record
WQTR= Welding Qualification Test Record
WPQR= Welding Performance Qualification Record

Accredited Test Facility

Initial On-Site Audit Application

Safety and Health	Y	N	Q. A. M. Index Section #
ASC Z49 Safety in Welding and Cutting			
Other(s) (Specify):			

Part V- General Questions 1-2	Y	N	Q. A. M. Index Section #
Are there training programs to maintain and improve skills?			
Does management review QA Program on a routine basis?			
If yes, how often?			
Who is responsible for the review?	Title:		

Part VI - Welding Tests Questions 1-6	Y	N	Q. A. M. Index Section #
1) Does the Test Supervisor have a checklist for the set-up and administration of the welding test?			
2) How is the WPS available to the candidate in the test station?			
3) Is safety equipment verified?			
4) Is material checked?			
5) Is fit-up verified?			
6) How do you verify that the test plates are not repositioned without approval?			

Part VII - Welded Test Assembly Handling Questions 1-7	Y	N	Q. A. M. Index Section #
1) Are written procedures or other methods available to define the visual inspection criteria to be applied to test assemblies?			
2) Are written procedures or other methods available to define the steps and examinations to be performed to comply with the Supplements?			
3) Are nondestructive test methods controlled by written procedures?			
4) Are contracted nondestructive testing methods properly defined in purchase orders to assure accurate testing and the application of the proper acceptance standards?			
5) Are sketches, drawings, etc. used to define the steps in performing the cutting and preparation for destructive testing (bends, nick-breaks, etc.?)			
6) Is there proper documentation as to the disposal of test specimens?			
7) Are internal nondestructive technicians trained, tested, and certified to SNT-TC-1A?			

Part VIII - Final Disposition Questions 1 to 2	Y	N	Q. A. M. Index Section #
1) What records are placed in the welders file?			
2) What records are forwarded to AWS Certification Department?			

Part IX - Welding Equipment and Controls Questions 1 to 6	Y	N	Q. A. M. Index Section #
1) SMAW			
a. Number of Units			
b. Number of AC			
c. Number of DC			
d. Number of AC/DC			
2) GMAW			
a. Number of Units			

Accredited Test Facility

Initial On-Site Audit Application

Part IX - Welding Equipment and Controls Questions 1 to 6 (Cont'd)	Y	N	Q. A. M. Index Section #
3) GTAW			
a. Number of Units			
b. Number of AC HF			
c. Number of DC			
d. Number of AC/DC			
4) FCAW			
a. Number of Units			
5) SAW			
a. Number of Units			
6) Other processes - (list each)			
Part X - Cutting Equipment Questions 1 to 4	**Y**	**N**	Q. A. M. Index Section #
1) OFC			
a. Number of Stations			
b. Type fuel gas utilized			
2) CAC			
a. Number of Units			
3) PAC			
a. Number of Units			
4) Mechanical cutting			
a. Mechanical			
b. Milling Machines			
c. Angle grinder			
d. Lathe			
e. Other equipment (list each)			
Part XI - Measuring & Testing Equipment Questions 1 to 6	**Y**	**N**	Q. A. M. Index Section #
1) Measuring/Testing Item - (For each item of equipment used in welder qualification, the following information shall be provided)			
a. Is a maintenance procedure or schedule established?			
b. Is maintenance log up to date?			
c. Does equipment appear abused?			
d. Are proper equipment records maintained?			
i. Is equipment identified?			
ii. Does it have calibration tag (if required)?			
iii. Are operating manuals available?			
e. Are calibration methods defined?			

Accredited Test Facility

Initial On-Site Audit Application

Part XI - Measuring & Testing Equipment Questions 1 to 6 (Cont'd)	Y	N	Q. A. M. Index Section #
2) Bend Testing Equipment			
a. Wrap-around fixture?			
b. Die & plunger fixture?			
c. Adjustable radius fixture?			
3) Other Testing Equipment			
a. Fillet break/nick break fixture?			
b. Tensile test machine?			
c. Impact Testing Machine?			
d. Other Testing Equipment?			
4) Other measuring equipment available: (Check all available)			
a. Tapelines			
b. Micrometers			
c. Calipers			
d. Scales			
e. Optical aids			
f. Fillet weld gauge			
g. Weld reinforcement gauge			
h. Hi-Low gauge			
I. Under-cut gauge			
5) Does facility perform any chemical tests?			
a. Mass spectrometer analysis			
b. Wet chemical method			
c. Macro Tech			
d. Are written procedures available?			
6) If the above tests are performed, are the applicable standards from AWS, ASME and ASTM available for control of procedures?			

Part XII - Records and Test Reports Questions 1 to 3	Y	N	Q. A. M. Index Section #
1) Are written procedures on file for record retention?			
2) Are records retained for the 5-year requirement per AWS QC-4-89?			
3) Are records secured?			

*** If more space is needed to answer any of the Checklist questions, please feel free to attach additional answers or relevant information to the back of this checklist.**

Accredited Test Facility

Initial On-Site Audit Application

Reviewer's Comments: (Use additional sheet for comments if needed.)

Auditor's recommendations (To be completed by Auditor):

_____ **Approve for Certification**

_____ **Submit Corrections to Auditor**

_____ **Re-Audit**

Auditor: _____ **Date** _____

A copy of this complete report shall be provided to the facility representative by the auditor.

Accredited Test Facility (ATF) Fees*

North American Fee Schedule

Initial Audit Fees	AWS Fee	Auditor Fee Paid by AWS?
Document review	$600	
Initial On-site Audit**	$1,700	Yes
Total	**$2,300**	
Additional Facilities		
Document review	$500	
Initial On-site Audit**	$1,500	Yes
Total	**$2,000**	
Yearly Renewals		
Annual 1st Year	$300	NA
Annual 2nd Year	$300	NA
Re-accreditation Audit Fee		
Document review	$500	
On-site Audit**	$1,500	Yes
Total	**$2,000**	

International Fee Schedule

Initial Audit Fees	AWS Fee	Auditor Fee Paid by AWS?
Document review	$600	
Initial On-site Audit**	$700	No***
Total	**$1,300**	
Additional Facilities		
Document review	$500	
Initial On-site Audit**	$500	No***
Total	**$1,000**	
Yearly Renewals		
Annual 1st Year	$400	NA
Annual 2nd Year	$400	NA
Re-accreditation Audit Fee		
Document review	$500	
On-site Audit**	$500	No***
Total	**$1,000**	

Fees are subject to change due to individual circumstances for each facility.

***Applicants are directly responsible for the auditor's travel expenses.*

****Auditor fees for international ATFs are as follows:*

Each Travel Day	$400
On-site Audit Fee	$800
Total Fee	(dependent on # of audit and travel days required)

Appendix:

N

Professional Development

2013-14 LCCD Flex Activities Contract-Form A

Please record your completed and/or intended flex activities in detail and return to **Colleen Baker** for initial approval by **October 4, 2013.**

Name: Kory Konkel

Part I. District Sponsored Activities ON Campus:

Date of Activity	Time	Title and Description	Hours	Total Hours Attended or Intended
August 15	9-10 AM	New Employee Orientation	1	
	10-11 AM	IPR/NIPR Status, Assignments, and Deadlines	1	
	3-4 PM	FERPA Regulations Made Easy	1	
	4-5 PM	Classroom Technology Training	1	
	5:30-7 PM	Adjunct and New Faculty Orientation	1.5	
	7-8 PM	Web Advisor, Report Server, Weave	1	
August 16	9-10:30 AM	Learning Styles	1.5	
	11 AM-Noon	Library Services	1	
	1-3 PM	Working Effectively with Special Needs & Difficult Students	2	
	3-4 PM	Child Abuse Prevention	1	
	4-5 PM	Adult Protective Services	1	
November 27	9 AM-4 PM	Online Training - choose from list of available topics below: **[claim 1 hour per training taken]**		
		FERPA: Confidentiality of Records	.5	
		Child Abuse: Identification & Intervention	1	
		Sexual Harassment Prevention	.5	
		Students at Risk	1	
		Veterans on Campus	1	
January 9	9-10 AM	New Employee Orientation	1	
	5:30-7 PM	Adjunct and New Faculty Orientation	1.5	
	7-8 PM	Web Advisor, Report Server, Weave	1	
January 10	8 AM-Noon	CPR	4	
	1-3 PM	Active Learning Strategies	2	
February 18 & 19	9 AM-4 PM	2 Day On Course Workshop [7 hours per day]	14	
		Part I Total Hours:		Ø

Part II. On-Campus Workshops Conducted: (Claim presentation hours x 2 for preparation.)
Example: For a 1 hour workshop, you would receive 3 hours of flex credit. [(1 hr. x 2) for prep + 1 hr. for presentation]

Add/Delete Row	Date	Workshop Title	Presentation Hours	Total Hours
+ -				Ø

Part II Total Hours:	0

Part III. BP4010-AP4010 work you did ON campus during Flex Days/Holidays/Spring Break/Summer:

Add/Delete Row	Date	Activity	Hours
+ -			
		Part III Total Hours:	0

Part IV. Individual OFF-Campus Activities: (Complete Form B for <u>each</u> OFF-campus activity.)

Add/Delete Row	Date	Title and Description	Hours
+ -	8/5/13	Weld-Ed, Welding Metallurgy, 40 hr. Class.	40
		Part IV Total Hours:	40

2013-14 LCCD Flex Activities Contract-Form A

Print Form | E-mail Form

Flex Activities **APPROVAL** Form
Please sign and return to **Colleen Baker** for approval by **October 4, 2013.**

Name: Kory Konkol

I certify that I will complete the above plan within the time line specified and that all changes will be submitted on a revised Flex Activities Contract form as an addendum to this agreement.

Total Hours Required: 35 **Total Contracted Hours:** 40

Faculty Member	Kory Konkol	**Date**	9/24/13
Flex Chair		**Date**	
EVP of Academic Services		**Date**	

2013-14 LCCD Flex Activities Contract-Form C

Print Form | E-mail Form

Flex Activities **COMPLETION** Form
Please sign and return to **Colleen Baker** at conclusion of contract, no later than **May 1, 2014.**

Name: Kory Konkol

I certify that I have completed my hourly commitment greater than or equal to the **35 hour flex** requirement.

Faculty Member	Kory Konkol	**Date**	9/24/13
Flex Chair		**Date**	
EVP of Academic Services		**Date**	

LCCD FLEX ACTIVITIES CONTRACT

Instructions: Please record your completed and/or intended flex activities in detail and return to Cindy Howe for initial approval by **September 28, 2012.**

Name: Kory Konkol **Date:** 10/8/12

Total hours required: 35 hours minimum **Total hours intended:** 35

Part I. District Sponsored Activities on Campus:

Date of Activity	Title and Description	Hours	Total Hours Attended
August 16	Accreditation Self-Evaluation 9-10 am	1	1
	Interactive Whiteboard/eno 10-11 am	1	1
	New Employee Orientation 11 am–12 pm	1	
	STRS Retirement 1-3 pm	2	
	WEAVEonline 3-4 pm	1	1
August 17	SLOs 10-11 am	1	
	Correspondence & Online 11 am–12 pm	1	
	Difficult & Special Needs Students 1-2 pm	1	
	WEAVEonline 2-3 pm (repeat)	1	
	Interactive Whiteboard/eno 3-4 pm (repeat)	1	
November 21	FERPA 9-10 am	1	
	Library Services 10-11 am	1	
	EEO 1-2 pm	1	
	Additional Training Sessions to be announced		
January 10	CPR 8:30 am-12:30 pm	4	
	Customer Service 1-2 pm	1	
	Additional Training Sessions to be announced		
January 11	Accreditation 9 am-12 pm	3	3
	Additional Training Sessions to be announced		
February 14	Datatel 1-2 pm	1	
	Additional Training Sessions to be announced		
April 30	OnCourse Workshop All Day	7.5	
	Additional Training Sessions to be announced		

Part I Total Hours: 6

Submitted to Cindy Howe on 12/19/12
This is the ammended version

Part II. On-Campus Workshops Conducted: (Claim one hour for prep + hours x 2 for presentation.)

Date	Workshop Title	Prep Hours	Presentation Hours	Total Hours

Part II Total Hours:

Part III. Bd. Policy-AP 4010 work you did *on campus* during Flex Days/Holidays/Spring Break/Summer:

Date	Activity	Hours

Part III Total Hours:

Part IV. Individual Activities off Campus (If you do any training off campus, you must complete page 5 for each activity.)

Date	Title and Description	Hours
11/12/12	FABTECH Metal Fabrication, Forming & Welding expo	9
12/26	Prepare IPR for welding program	5
12/27	" " " " "	5
12/28	" " " " "	5
12/29	" " " " "	5

Part IV Total Hours: 29

FLEX ACTIVITY AGREEMENT APPROVAL FORM 2012-2013

Please sign and return to Cindy Howe for approval by September 28, 2012.

Name: Kory Konkol **Date:** 10/8/12

I certify that I will complete the above plan within the timeline specified and that all changes will be submitted on a revised Flex Activities Contract form as an addendum to this agreement.

Total Hours Required: 35 **Total Contracted Hours:** 35

Kory Konkol 10/8/12

Faculty Member **Date**

Flex Chair **Date**

EVP of Academic Services **Date**

INDIVIDUAL FLEX ACTIVITY CONTRACT

INSTRUCTIONS: Faculty will complete, sign and return to Academic Services by **September 28, 2012.**

(Use one form for EACH off-campus flex activity.)

Name: Kory Konkol **Date:** 10/8/12

FLEX HOURS CLAIMED FOR THIS ACTIVITY **Total hours claimed:** 9

1. Describe in detail the activity to be undertaken. Include dates, location, hours involved.
   Attend (AWS) American Welding Society educational seminar at the FABTECH Welding expo in Las Vegas, NV. on 11/12/12 for a total of 9 hours
2. Cite the specific section of Board Policy that qualifies your activity for Flex (see AP 4010).
   Board Policy # 6255 "E" (conferences, workshops, and institutional Research)
3. Specify how your activity qualifies under the above section of Board Policy.
   Educational workshop related to welding & equipment used in the industry will be implemented in the classroom.

I submit the above activity for approval of partial fulfillment of my 35-hour flex obligation. I understand that denial will be accompanied by a full explanation from Academic Services no later than December 12, 2012.

Kory Konkol 10/8/12

Faculty Member **Date**

Flex Chair **Date**

EVP of Academic Services **Date**

☐ **Approved**

☐ **Denied for the following reason:**

INDIVIDUAL FLEX ACTIVITY CONTRACT

INSTRUCTIONS: Faculty will complete, sign and return to Academic Services by **September 28, 2012.**

(Use one form for EACH off-campus flex activity.)

Name: Kory Konkol **Date:** 10/8/12

FLEX HOURS CLAIMED FOR THIS ACTIVITY **Total hours claimed:** 20

1. Describe in detail the activity to be undertaken. Include dates, location, hours involved.
   Prepare IPR for the welding technology program at home from 12/26 - 12/29/12 for a total of 20 hours.
2. Cite the specific section of Board Policy that qualifies your activity for Flex (see AP 4010).
   Board policy #6255 "A & F" Course instruction & evaluation and other duties approved by the district.
3. Specify how your activity qualifies under the above section of Board Policy.
   preparing IPR evaluates the program and any need for changes.

I submit the above activity for approval of partial fulfillment of my 35-hour flex obligation. I understand that denial will be accompanied by a full explanation from Academic Services no later than December 12, 2012.

Kory Konkol — **Faculty Member** — 10/8/12 — **Date**

Flex Chair — **Date**

EVP of Academic Services — **Date**

☐ **Approved**

☐ **Denied for the following reason:**

Weld-Ed

National Center for Welding Education and Training

Educator's Training

Welding Metallurgy

40 Professional Development Hours (PDH) • 4 CEUs

Certificate of Completion

PRESENTED TO

Kory Konkol

This Certificate is presented on behalf of Weld-Ed National Center for Welding Education and Training in recognition of your completion of the "Welding Metallurgy" course held at Yuba College in Marysville, California, August 5th – August 9th, 2013.

Duncan Estep

Duncan Estep, Center Director
Weld-Ed National Center

Weld-Ed

National Center for Welding Education and Training

Educator's Training

Design, Assembly, and Robotic Welding

40 Professional Development Hours
4 Continuing Education Units

Certificate of Completion

PRESENTED TO

Kory Konkol

This Certificate is presented on behalf of the National Center for Welding Education and Training in recognition of your course completion on August 1st, 2014.

Duncan Estep, Center Director
Weld-Ed National Center