

**UNIVERSITY OF ARKANSAS AT MONTICELLO  
COLLEGE OF TECHNOLOGY-CROSSETT  
ANNUAL ASSESSMENT REPORT 2012-13** (REVISED 4-10-14)

# **Welding Technology**



**UAM College of Technology-Crossett**  
**Welding Technology**  
**Annual Assessment Report 2013** *(Revised 4-10-14)*

**1. What are the Student Learning Outcomes (SLOs) for your unit? How do you inform the public and other stakeholders (students, potential students, and the community) about your SLOs?**

The following is a list of the Student Learning Outcomes for the Welding Technology program: Successful completers of the UAM-CTC Welding Technology Program will be able to:

- 1) Demonstrate proper oxy-fuel cutting process (OFC) and torch adjustments, with emphasis on safety.
- 2) Demonstrate the ability to produce sound and discontinuity-free welds with the Shield Metal Arc Welding process (SMAW), in the 1G, 2G, 3G, and 4G positions.
- 3) Demonstrate the ability to produce quality welds in all positions using Gas Metal Arc Welding process (GMAW).
- 4) Demonstrate the ability to produce quality welds in all positions using Gas Tungsten Arc Welding process (GTAW).
- 5) Demonstrate the ability to produce sound and discontinuity-free welds on pipe using both the SMAW and GTAW processes, in the 2G, 5G, and 6G positions.

Interested individuals can locate information regarding SLOs by the following methods:

- Online at [www.uamont.edu/uamctc/WeldingTechnology.htm](http://www.uamont.edu/uamctc/WeldingTechnology.htm)
- The Welding Technology brochure (Appendix A)
- The UAM-CTC Program Information booklet (Appendix B).
- Individual courses each have specified Student Learning Outcomes. Three examples are provided in Appendix C.

**2. Describe how your unit's Student Learning Outcomes fit into the mission of the university.**

UAM MISSION STATEMENT	WELDING TECHNOLOGY STUDENT LEARNING OUTCOMES
The University of Arkansas at Monticello shares with all universities the commitment to search for truth and understanding through scholastic endeavor.	SLO 1-6: All of the student learning objectives are aimed at preparing students to be successful professionals in welding. The search for truth and understanding are less in a philosophical

UAM MISSION STATEMENT	WELDING TECHNOLOGY STUDENT LEARNING OUTCOMES
	realm as in disciplines such as social sciences or arts and humanities, but rather as the molding of a competent worker who performs his/her skills and abilities in an ethical manner.
The University seeks to enhance and share knowledge, to preserve and promote the intellectual content of society, and to educate people for critical thought.	SLO 2, SLO3, SLO4, and SLO 5: Welding skills involve not only steady hands-on skills but mathematical expertise also. Proper angles and metal fittings require both ability and critical thought processes.
The University provides learning experiences which enable students to synthesize knowledge, communicate effectively, use knowledge and technology with intelligence and responsibility, and act creatively within their own and other cultures.	SLO 1: Emphasis on safety. The students must understand that a safe working environment is paramount in this discipline. Fatalities and injuries have resulted from not understanding or truthfully following safety rules. Improper welds have resulted in structural failures. These failures have resulted in astronomical costs in economic losses, injuries, and fatalities.
The University strives for excellence in all its endeavors. Educational opportunities encompass the liberal arts, basic and applied sciences, selected professions, and vocational/technical preparation. These opportunities are founded in a strong program of general education and are fulfilled through contemporary disciplinary curricula, certification programs, and vocational/technical education or workforce training.	SLO 2, SLO 3, SLO 4, SLO 4, and SLO 5: Without the training in mathematics, MAT 1203 (Technical Mathematics), the students would be unable to perform the required vocational skills. Blueprint Reading is required to enable the students to be competent in recognizing and understanding welding symbols. Welding skills are by nature a vocational/technical skill. The completers will take tests to be become certified. The Welding Technology Program requires that students take general math, communication, and computer courses as outlined in the UAM-CTC program information booklet
The University assures opportunities in higher education for both traditional and non-traditional students and strives to provide an	All of the SLOs apply to this metric. Our student population has been very diverse. Completers have ranged in ages from 17 years to 60+ years.

UAM MISSION STATEMENT	WELDING TECHNOLOGY STUDENT LEARNING OUTCOMES
environment that fosters individual achievement and personal development.	The majority of our learners, but not all, have been male. Also, different races and ethnicities have enrolled and graduated from our program.

**3. Provide an analysis of the learning data from your unit. How is this data used as evidence of learning?**

During classroom and lab instruction, the instructor monitors the class and asks questions. The student responses enable the instructor to assess whether or not the material is being understood and should be presented again or presented differently. The welding assignments require the students to perform certain welding processes. Obviously, if a learner cannot perform those processes correctly, he or she will not be able to complete the welding laboratory exercises.

An analysis of the end of course grades for the past seven years yields data that informs the instructor how students are learning in each course. A series of charts provided in Appendix D demonstrate evidences of learning as well as information that guides modifications in program offerings. Notes are provided that offer explanation for specific information.

The program was an active, full-time program from the opening of the institution in 1975 until 1991. After several years as a part-time program, the UAM-CTC Welding Technology Program returned to full-time program status in 2006. The full-time instructor had been a part-time instructor for about three years, and had over 40 years of experience in welding. The instructor developed a format and step-by-step guideline that he uses for each welding process taught, such as Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), and Gas Metal Arc Welding (GMAW). Based on the recommendation of the instructor, a ten-step process has been created to teach the skills needed to become a qualified/certified welder. Each learner must pass a visual inspection before advancing to the next step in the ten-step process. The ten steps are listed below.

1. Creating padding beads – using both 6010 and 7018 electrodes
2. Welding a T-Joint – using both 6010 and 7018 electrodes
3. Welding a corner joint in the 1G position
4. Welding a corner joint in the 2G position
5. Welding a corner joint in the 3G position
6. Welding a corner joint in the 4G position
7. Performing a V-Groove weld in the 1G position
8. Performing a V-Groove weld in the 2G position
9. Performing a V-Groove weld in the 3G position
10. Performing a V-Groove weld in the 4G position

Each student is given a letter grade based on criteria that has been presented to him/her in lecture, with criteria stated in a rubric (See Appendix E), and through an instructor demonstration. Students do not advance to the next step until their weld in each step is evaluated by the instructor to be satisfactory (graded A, B, C, or D). When all ten steps are successfully completed, that student will have the skills to become a certified welder. Unfortunately, not all students enrolled can achieve this success; an analysis of the past seven years shows the successful completion rate of individual courses to be about 75%. The actual graduation rate has consistently been much lower than that and will be discussed in subsequent sections of the report.

An antidotal example, in contrast to students who don't achieve success in the Welding Technology Program, are two current students who enrolled in Basic Welding and Shielded Metal Arc Welding and within only six weeks completed all the skills necessary for certification in both courses as well as earning certification in welding structured steel. These students are an example of highly skilled and motivated students. Two other students, one male and one female who are in Maintenance Welding which is only one day per week have both recently certified in basic welding. Skills are developed and demonstrated by "hands on" lab work, which is the most important part of learning to weld. The instructor also gives classroom instruction based on the National Center for Construction Education and Research (NCCER) curriculum, and students are given tests and letter grades for those written evaluations. More information on NCCER will be provided in question 5. Lab work with hands on training and instruction make up 60% of students' overall grade and the written evaluations contribute 40%. Evidence of the validity of the process for evaluating welding students is indicated in the following table that indicates graduates and "non-graduates" who have gone to work in the welding field.

When our institution was accredited by the Council on Occupational Education, there was a provision to indicate what was termed "non-graduate completers." These were students who went to work in the field of study, but who did not actually complete all graduation requirements. The table that follows includes an illustration for the years 2007 through 2011 students who fit that description as well as how many began, graduated, and became employed in the field. In meeting the current Federal requirements of Gainful Employment reporting, only graduates are followed up to determine employment status.

**UAM-CTC Welding Program Graduates and Job Placement Data**

Program Year	Students Enrolled (Declared Welding Majors)	Number of Graduates	Graduates Employed in the Field at Follow-up	Number of Non- Graduate Completers*	Total Placement in Welding
2006-2007 Night Program	6	0	NA	NA	NA
2007-2008 Night Program	19	1	1	9	10
2008-2009 Night Program	17	5	2	5	7
2009-2010 Night Program	17	4	4	7	11
2010-2011 Night Program	19	3	3	5	8
2011-2012 Night Program	13	2	2	0	2
2012-2013 Began Day Program	23	9	8	0	8

*\*"Non-graduate" completers is a definition from the Council of Occupational Education of students who became employed in the field, but did not finish all graduation requirements.*

In the first year of offering the program in the daytime (2012-2013), both enrollment and graduation rate increased significantly. Graduation rates from 2006 to 2012 were as low as 0% the first year and no higher than 29% at best. In the first full year as a day program, the graduation rate rose to 39%. As stated in other sections, considering the individuals who enrolled and completed that first year, the new structure and a new curriculum (as explained in the following section) appears to be drawing a better academically skilled student as well as one who is serious about learning how to weld in order to provide for his/her future.

**4. Based on your analysis of student learning data in question 3, include an explanation of what seems to be improving student learning and what should be revised.**

The steps of acquired skills as explained in question 3 have been in place since the program returned to full-time status in the fall semester 2006. When the reactivated program was in its infancy, the entire program was offered in the evening and at night to reach adult learners who had full-time day jobs. That scheduling approach was okay to get the program started, but did not produce graduates as needed. The welding instructor met with the Vice Chancellor and Assistant Vice Chancellor, and all were in agreement to change the program to day-only offerings beginning in the fall semester 2012. This decision has proven to be a good one as it attracted good students who are truly interested in learning welding technology for a long-term future career. As shown in the table above, after changing to a daytime program, both the enrollment and the number of graduates increased. The day program is

attracting not only young students who seriously want to be welders but also mature students such as those who were among the dislocated workers from the closing of the Georgia-Pacific Plywood Plant in December of 2011. Those displaced workers started college in the spring 2012 semester and thus were unable to meet all graduation requirements until the summer term 2013 which further contributed toward the increase of graduates for 2013.

One issue that this program faces is both advantageous and detrimental. It is beneficial to students who are in a position in life where they critically need to go to work full-time within a short period of time. Some students are quickly able to earn certifications in welding positions and immediately go to work making \$25 and more per hour. The down side for the program is that many of those in that situation drop out and don't finish all graduation requirements thus leaving the program looking like it is not viable in terms of graduation rate.

Enrollment and completion are significantly better in the day program than when only offered at night; however, there are still some students who slip through the cracks because of lack of motivation, or the lack of academic skills. The instructor continues to advocate for a standardized test that would assess prospective students and inform them if they don't have reading and math skills needed for success in welding so that they can better prepare themselves before beginning this occupational program. There is a misconception by the general populous that it doesn't take a very high level of academic skills to be a welder, but in the 21st century, that is not the case. Students must have solid, almost innate mathematical skills in measurement, geometry, and some trigonometry. Reading comprehension not only helps the student get through the classroom and written tests and assignments, but is necessary for the continually changing influence of technology in the industrial field.

The staff and faculty believe that student learning is improved by an attendance policy that realistically mirrors that of a workplace. Such policy has been in place since the opening of the institution with one exception. In program year 2009-2010 the faculty voted to abandon the policy. They quickly recognized that students who were tardy and absent were falling behind and failing out. The following program year, faculty voted to bring back the attendance policy in order to enhance student retention.

***5. Other than course level/grades, describe/analyze other data and other sources of data whose results assist your unit to improve student learning.***

In program year 2012-2013 both UAM Colleges of Technology researched and became familiar with a national organization and its curriculum for welding. Quoted from its website, "NCCER (National Center for Construction Education and Research) is a not-for-profit 501(c)(3) educational foundation created in 1996 as the National Center for Construction Education and Research. It was developed with the support of more than 125 construction CEOs and various association and academic leaders who united to revolutionize training for the construction industry. Sharing the common goal of developing a safe and productive workforce, these companies created a standardized training and credentialing program for the industry. This progressive program has evolved into curricula for more than 70 craft areas and a



complete series of more than 70 assessments offered in over 4,000 NCCER-accredited training and assessment locations across the United States. NCCER develops standardized construction and maintenance curricula and assessments with portable credentials. These credentials are tracked through NCCER's National Registry which allows organizations and companies to track the qualifications of their craft professionals and/or check the qualifications of possible new hires. The National Registry also assists craft professionals by maintaining their records in a secure database." (source: [www.nccer.org](http://www.nccer.org)) With concurrence from their administrators the welding technology instructors at both colleges acquired the curriculum and completed the instructor certification training to both use the curriculum and test individuals with NCCER standardized tests. More information on the NCCER welding curriculum is available at <http://www.nccer.org/welding?plD=86>. This new curriculum has improved students' test scores and welding knowledge as evidenced in the pass rate for individual courses (See Appendix D).

After using the program for a year, both UAM College of Technology-Crossett and UAM College of Technology-McGehee instructors determined that the system was very cumbersome as far as the voluminous paperwork involved for each student. After a thorough evaluation of pros and cons, the instructors and administrators decided to forego the national registry component, but to continue using the curriculum because it is nationally standardized and is very well-prepared.

One "source of data" that is crucial to the success of any program is the evidence of the potential for employment after graduation. As of this writing, UAM-CTC Welding Technology Program has a direct link to Schueck Steel, Inc. out of Little Rock in hiring some of our students as welders. At periodic times, Schueck Steel gives welding tests that are conducted at Delta Community College in Bastrop, Louisiana, and our students are invited. Schueck Steel brings their own quality control people from Little Rock to give the welding tests. Individuals are given a test in the 3G and 4G positions using a 1" plate beveled at 22 ½ degrees with "backing" welded with 7018 electrodes using welding code American Society of Welders (AWS) D.1.1. AWS information is available at the following website: <http://www.aws.org/w/a/certification/index.html?id=TKo57Q4s>. These tests are visually inspected and are subjected to destructive testing. Students who are successful will fill out an application on the spot, and we have two of our students currently employed with this company.

Another company with which our welding instructor works is Hemi-Systems who are contracted to build a new pellet plant near Log Cabin, Louisiana. At the present time, we have five students currently enrolled in our program who have earned certification in the American Society of Mechanical Engineers (ASME) Section IX Welding Code. <https://www.asme.org/products/courses/overview-welding-under-section-ix>.

When the construction of this plant swings into full gear, the project manager has promised that he would hire those students who have the ASME certification on Fridays, Saturdays, and possibly Sundays paying \$28 per hour. This is a great opportunity for the students who need extra money.





**6. As a result of the review of your student learning data in previous questions, explain what efforts your unit will make to improve student learning over the next assessment period. Be specific indicating when, how often, how much, and by whom these improvements will take place.**

The welding department faculty has asked for the consideration of a standardized entrance exam to be administered to all potential welding entrants. If allowed, this test would require that all enrolling welding students possess a minimum level of mathematical and reading skills. Retention and graduation rates have been negatively affected by admitting/enrolling individuals into the welding program who have low or marginal basic academic skills. More discussion and research will be done to recommend minimum basic skills levels for enrolling in the Welding Technology Program.

NCCER has proven to be very viable for developing welding skills; therefore, the welding department will continue its use over the next assessment period. The delivery of this standard of training will improve as the instructor gains more experience in using the NCCER program curriculum to teach the welding students.

An area of improvement the instructor will make is in developing more knowledge and understanding of the diversity of adult learners. Finding a balance of rigor and responsiveness toward students and their needs will be accomplished through self-directed research and reading, through discussions with colleagues and supervisors, and through professional development

The welding instructor intends to keep the same format and guidelines that he is teaching now -- because it works. In his professional estimation, the reason it works is because students must work with intensity and persistence to successfully complete the steps in the program process, and that completion of those steps produce good welders. The instructor has intentions to look at ways to improve classroom lecture/theory, to include integrating technology such as PowerPoint® presentations and online videos to grab students' attention and keep them engaged through available digital avenues.

**7. What new tactics to improve student learning has your unit considered, experimented with, researched, reviewed or put into practice over the past year?**

- In consideration for potential changes for the program, the welding instructor made an evaluation that will affect future student learning. Recently, welding simulators have been developed and heavily advertised to welding education programs. The promise is that the simulators offer the great advantage of supply cost savings. The welding department faculty evaluated the simulators and found that they are substandard to actual hands-on welding practice in the laboratory. Also, the initial cost of installation of the simulators is extremely expensive. It has been determined that it is best to continue with actual hands-on work in the laboratory due to these factors.

- A crackdown on absenteeism has been implemented and will continue. When students miss classes, it becomes tremendously difficult (if not impossible) to make up the laboratory work. The UAM-CTC unit attendance policy places anyone who misses 15% of the total class hours on attendance probation. If a student's absences reach 20% of the total class hours, he/she will receive an "F" in the course, unless the student withdraws by the allowable date to receive a "W." To further strengthen the positive effects of the policy, this year our part-time Career Coach began alerting students when they had been absent for 10% of the total class hours. In the welding program, as well as in most technical courses, most likely it will be too late to recover from even 15% of missed time, let alone 20%.

***8. How do you ensure shared responsibility for student learning and assessment among students, faculty and other stakeholders?***

Ensuring shared responsibility is a continuous activity. Each course has its own syllabus that specifically states what activities must be performed and that breaks down the grading scale and the percent rating of the laboratory, exam/quiz scores, and final exam. Instructors cover the syllabi content and make clear the expectations at the beginning of each semester for each course. Feedback from the students is solicited to ensure that the students know the rules and content of each class.

The laboratory assignments and written tests are administered for students to demonstrate their understanding of theory through test scores. Their actual welding ability is made evident through the laboratory work and hands-on projects. The instructor reviews the exams and laboratory results to ensure learners are both being taught and assessed for theory and performance – the proof of combined knowledge, skills, and abilities.

The Welding Technology curriculum was implemented in 2006 and its offering has changed from night to day. At the same time, the curriculum changed from that which was developed "in house" over a period of 30 years to one that is standardized – the NCCER curriculum. The instructor works with former students, advisory committees, faculty, and administrative staff to incorporate appropriate changes and emphases that may be needed to each and every course. This also applies to changes in the total Welding Technology Program content.

Our placement rates in the field (evidence of student learning and productive assessment) have improved over the past six years. As previously stated, 100% of the 2012 graduates entered currently employment in the field. The Welding Technology Program has developed a very positive reputation in the community and particularly among contractors and industry representatives – both of which are evidences of success with stakeholders.

**9. Describe and provide evidence of efforts that your unit is making to recruit/retain/graduate students in your unit/at the University. (A generalized statement such as “we take a personal interest in our students” is not evidence.)**

- Efforts for recruitment include the job and career fairs that are supported by UAM Admissions Office and manned by UAM-CTC Student Services Coordinator and the Career Coach.
- In a small town such as Crossett, much of the recruitment is word of mouth and personal inquiries from parents and grandparents who know and respect the welding instructor or who have heard of the success of previous graduates.
- UAM-CTC has a part-time Career Coach who works with at-risk students to identify problems that may be inhibiting their academic success. Bad grades, consistent tardiness, and attendance issue are reviewed. The specialist also works with the instructors to determine specific ways to help students through challenging periods within the semester/year.
- As mentioned previously, an attendance policy has been in place since the opening of the institution with one exception. In program year 2009-2010 the faculty voted to abandon the policy. By the end of the fall 2009 semester, almost all the instructors wanted the policy back because they were experiencing a nightmare with tardy or absent students who would miss skill sets that were sequential and necessary for the next higher level of application. The students who were not present were falling behind and failing out. Of course, administration would not change such an important policy in the middle of a program year. The following program year, faculty voted to bring back the attendance policy in order to enhance student retention.
- The Career Pathways Initiative helps parents who are working full- or part-time. The program assists eligible students with gasoline purchases, tuition, books, and child care, and provides tutoring help.
- The Welding Technology instructor serves as an academic advisor to the students. The duties include: enrolling students in classes, performing degree audits, and making sure that the students apply for their degrees and diplomas.
- The two examples in question 5 of employers who are hiring our students strengthens student recruitment/retention/graduation.
- Also, from time to time, a graduate comes in and tells current students about the money he/she is earning and how the Welding Program has paved the way for them. One recent graduate has earned \$96,000 in just six months so far. Anecdotal data like this helps anyone enrolled to become inspired to invest the time and effort required to learn this trade.

## Student Learning Objectives

Successful completers of the UAM-CTC Welding Technology Program will be able to:

- ☐ demonstrate proper oxy-fuel cutting process and torch adjustments with emphasis on safety.
- ☐ demonstrate the ability to produce sound and discontinuity-free welds, with the Shielded Metal Arc process in the 1G, 2G, 3G, and 4G positions.
- ☐ demonstrate the ability to produce quality welds in all positions using the Gas Metal Arc process.
- ☐ demonstrate the ability to produce quality welds in all positions using the Gas Tungsten Arc process.
- ☐ demonstrate the ability to produce sound and discontinuity-free welds on pipe using both the Shielded Metal Arc and Gas Tungsten Arc processes in the 2G, 5G, and 6G positions.

*The University of Arkansas at Monticello is committed to providing educational opportunities to all qualified students and employment opportunities to all persons, regardless of their economic or social status, and will not discriminate on the basis of race, color, religion, creed, gender, ethnic or national origin, disability, age or any legally protected class. The Office of Special Student Services has been designated to coordinate efforts to comply with all laws and regulations applicable to qualified individuals with disabilities, as required by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990. Inquiries concerning the application of all federal laws and regulations regarding discrimination should be directed to the Human Relations Officer, Officer of Finance and Administration, Babin Business Center, (870) 460-1021.*

## General Information

UAM CTC offers post-secondary training to help individuals gain the knowledge and skills needed to enter and advance in their selected career. In all programs, you will be trained in the skills which employers say you will need in that particular occupational area. The staff works closely with business and industry to keep our programs responsive to the changing workplace. Each of our programs covers both the theory (class work) and the practical (lab work) aspects of the field. And, of course, you will be trained to use the needed equipment for the occupation you choose.

An applicant who does not have a high school diploma or equivalency will be given an opportunity to work toward earning the Arkansas High School Diploma (GED®) by taking free classes

Because of the high demands of some career areas, our programs frequently have more applicants than openings. Reapplication will be required after one year, and free refresher courses for academic skills are available.

## Associate of Applied Science in General Technology

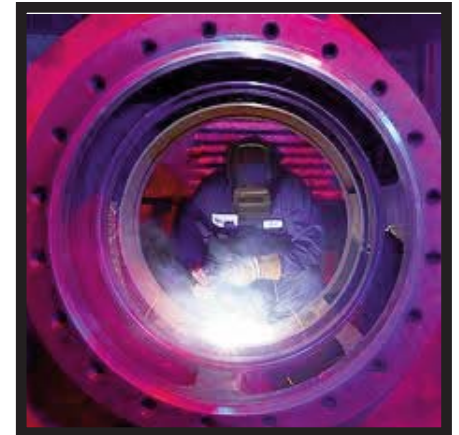
Welding Technology students may choose to continue their studies and earn an Associate of Applied Science in General Technology (AASGT) degree. There are two options for completion of the AASGT degree plan. Details of requirements for the Associate of Applied Science in General Technology degree are found in the Division of General Studies section of the UAM catalog.

**Note:** Technical courses required for technical certificate programs may be transferable toward a limited number of associate and baccalaureate degrees. Contact advisor for information regarding transferability.



# Welding Technology

**Program Information 2012-2013**



*“Training for Jobs of Today and Tomorrow”*

**University of Arkansas at Monticello  
College of Technology-Crossett**

1326 Highway 52 West  
Crossett, AR 71635  
870-364-6414 or 1-866-323-3384  
Fax: 870-364-5707  
Web Site: [www.uamont.edu](http://www.uamont.edu)



## Welding Technology

The increased demand for certified welders has generated a need to offer in-depth training and lab experiences necessary for the development of combination and advanced welding skills required for certification in multiple areas. The Welding Technology program is designed to meet those objectives. Students will be trained in Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Gas Metal Arc Welding (GMAW), and Pipe Welding.

The Welding Technology program is designed to provide hands-on training in the lab. Students who successfully accomplish welding skills in accordance with established proficiency standards will be eligible to earn various American Welding Society certifications. Classes are scheduled to accommodate area high school students who would like to attend the program for concurrent credit which awards both high school and college credit. The one-year technical certificate program may be continued to an Associate of Applied Science Degree in General Technology.



### Financial Aid

Even though our tuition and fees are very reasonable, we recognize that financial problems sometimes create a barrier to enrollment. We are committed to assisting eligible students to attain financial aid in the form of scholarships, grants, or loans through one or more local, state, or federal programs as well as federal and institutional work-study jobs. For complete information on financial assistance, contact our Student Services Coordinator at 870-364-6414, extension 2030 or toll-free 866-323-3384.

### Accreditations

UAM CTC is accredited by the Higher Learning Commission (a commission of the North Central Association of Colleges and Schools), and UAM CTC programs are approved by the State Approving Agency for Veterans.

The Welding Technology program length for a full-time student is two (2) semesters and one (1) summer term.

Individuals who desire only a Certificate of Proficiency in welding may complete the 11 credit hours indicated with an asterisk (\*) in the suggested schedule that follows:



### Graduation Requirements (Suggested Schedule)

Fall Semester		Semester Hours
WELD 1103	Blueprint Reading	3
WELD 1115	*Basic Welding	*5
WELD 1215	*SMAW (Shielded Metal Arc Welding)	*5
WELD 1401	*Welding Lab I	*1
MAT 1203	Technical Mathematics or higher level math course	3

\*Exit: Welding Certificate of Proficiency OR Continue to Welding Technical Certificate.

(NOTE: If student plans to continue, he/she should also complete WELD 1103 and MAT 1203 as outlined above.)

### Spring Semester

WELD 1315	GTAW (Gas Tungsten Arc Welding)	5
WELD 1415	GMAW (Gas Metal Arc Welding)	5
WELD 1501	Welding Lab II	1
COM 1203	Technical Communications or higher level composition course	3
CFA 1103	Computer Fundamentals <u>OR</u> higher level computer course	3

### Summer Term I

WELD 1513	Pipe Welding	3
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Exit: Welding Technology Technical Certificate 37



### Program Costs:

Welding Technology Program	
Total Tuition & Fees	\$3,212
Books & Supplies (Approximately)	\$745
<i>Tests for welding certifications are in addition to the tuition and fees and are based on the type of test being taken.</i>	

## WELDING TECHNOLOGY

### Program Description and Student Learning Outcomes

The increased demand for certified welders has generated a need to offer in-depth training and lab experiences necessary for the development of combination and advanced welding skills required for certification in multiple areas. The Welding Technology program is designed to meet those objectives. Students will be trained in Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW), Gas Metal Arc Welding (GMAW), and Pipe Welding.

The Welding Technology program is designed to provide hands-on training in the lab. Students who successfully accomplish welding skills in accordance with established proficiency standards will be eligible to earn various American Welding Society certifications. Classes are scheduled to accommodate area high school students who would like to attend the program for concurrent credit which awards both high school and college credit. The one-year technical certificate program may be continued to an Associate of Applied Science in General Technology degree.

Successful completers of this program will be able to:

- demonstrate proper oxy-fuel cutting process (OFC), and torch adjustments, with emphasis on safety.
- demonstrate the ability to produce sound and discontinuity-free welds, with the Shielded Metal Arc process (SMAW) in the 1G, 2G, 3G, and 4G positions.
- demonstrate the ability to produce quality welds in all positions using the Gas Metal Arc process (GMAW).
- demonstrate the ability to produce quality welds in all positions using the Gas Tungsten Arc process (GTAW).
- demonstrate the ability to produce sound and discontinuity-free welds on pipe using both the SMAW and STAW process in the 2G, 5G, and 6G positions.

The program length for a full-time student is two (2) semesters and one (1) summer term. The program costs are approximately \$3,212 for tuition and fees and approximately \$745 for books and supplies. *Tests for welding certifications are in addition to the tuition and fees and are based on the type of test being taken.*

Individuals who desire only a Certificate of Proficiency in welding may complete the 11 credit hours indicated with an asterisk (\*) in the suggested schedule below.

### GRADUATION REQUIREMENTS

(Suggested Schedule)

		<u>Fall Semester</u>	<b>Credit Hours</b>
WELD	1103	Blueprint Reading	3
WELD	1115	*Basic Welding	*5
WELD	1215	*SMAW (Shielded Metal Arc Welding)	*5
WELD	1401	*Welding Lab I	*1
MAT	1203	Technical Mathematics (or higher-level math course)	3
		<b>*Exit: Welding Certificate of Proficiency OR continue to Welding Technical Certificate.</b>	<b>*11</b>
		<b>(NOTE: If student plans to continue he/she should also complete WELD 1103 and MAT 1203 as outlined above.)</b>	<b>17</b>
		<u>Spring Semester</u>	
WELD	1315	GTAW (Gas Tungsten Arc Welding)	5
WELD	1415	GMAW (Gas Metal Arc Welding)	5
WELD	1501	Welding Lab II	1
COM	1203	Technical Communications (or higher-level composition course)	3
CFA	1103	Tech Computer Fundamentals (or higher-level computer course)	
		<u>Summer I Term</u>	
WELD	1513	Pipe Welding	3
		<b>Exit: Welding Technology Technical Certificate</b>	<b>37</b>

Appendix B



**UAM COLLEGE OF TECHNOLOGY-CROSSETT  
WELDING TECHNOLOGY PROGRAM  
WELD 1115 BASIC WELDING  
COURSE SYLLABUS  
FALL 2012**

**Instructor:** Jimmy DuBose, Telephone: 870-364-6414, ext. 160, or toll-free 1-866-323-3384  
**Instructor E-Mail:** dubose@uamont.edu  
**Fall Semester:** August 22- December 14, 2012  
**Class Meets:** Monday & Wednesday – 8:00 a.m. - 12:30 p.m.  
**Pre-requisite:** None  
**Office Hours:** 7:30 a.m.-8:00 a.m. M-Th  
**Course Title:** WELD 1115 Basic Welding, 5 credit hours (2 hrs lecture, 9 hrs lab)

**Required Text:** NCCER Contren Learning Series Trainee Guide, Level One, 4<sup>th</sup> Edition, Prentice Hall. ISBN: 9780136099673

**Course Description:** Basic Welding covers the principles of oxy-acetylene cutting, basic principles, procedures, safety, and experience using electric arc welding equipment.

**Course/Student Learning Outcomes:** After successfully completing this course, an individual should be able to:

- I. Module 29101-09 - Welding Safety
  - a. Identify some common hazards in welding
  - b. Explain and identify proper personal protection
  
- II. Module 29102-09 – Oxy-Fuel Cutting
  - a. Identify and explain the use of oxy-fuel cutting equipment
  - b. Set up oxy-fuel equipment
  - c. Light and adjust torch
  - d. Change cylinders
  - e. Perform oxy-fuel cutting
  
- III. Module 29103-09 – Plasma Arc Cutting
  - a. Explain the plasma arc cutting processes
  - b. Prepare and set up plasma arc equipment
  
- IV. Module 29104-09 – Air Carbon Arc Cutting and Gouging
  - a. Identify and explain the air carbon arc cutting (CAC-A) process and equipment.
  
- V. Module 29105-09 – Base Metal Preparation
  - a. Clean base metal for welding or cutting
  - b. Identify and explain joint design
  
- VI. Module 29106-09 – Weld Quality
  - a. Identify and explain codes governing welding
  - b. Identify and explain weld imperfections and their causes
  
- VII. Module 29107-09 – SMAW – Equipment and Setup

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- a. Identify and explain shielded metal arc welding (SMAW) safety
  - b. Explain welding electrical current
  - c. Set up a machine for welding
- VIII. Module 29108-09 - Shielded Metal Arc Electrodes
- a. Identify different types of filler metals
  - b. Identify and select the proper electrode for a specified welding task
- IX. Module 29109-09 - SMAW – Beads and Fillet Welds
- a. Set up (SMAW) equipment
  - b. Describe methods of striking an arc
  - c. Make stringer, weave and overlapping beads
  - d. Make fillet welds in the following positions:
    - 1. Horizontal (2F)
    - 2. Vertical (3F)
    - 3. Overhead (4F)
- X. Module 29110-09 – Joint Fit-up and Alignment
- a. Check for joint misalignment and poor fit-up before and after welding
  - b. Identify and explain distortion and how it is controlled
- XI. Module 29111-09 – SMAW – Groove Welds with Backing
- a. Identify and explain groove welds
  - b. Identify and explain groove welds with backing
  - c. Perform (SMAW) for v-groove welds with backing in the following positions:
    - 1. Flat – (1G)
    - 2. Horizontal – (2G)
    - 3. Vertical – (3G)
    - 4. Overhead – (4G)
- XII. Module 29112-09 – SMAW – Open V-Groove Welds
- a. Prepare (SMAW) equipment for open-root v-groove welds
  - b. Perform open-root v-groove welds in the following positions:
    - 1. Flat – (1G)
    - 2. Horizontal – (2G)
    - 3. Vertical – (3G)
    - 4. Overhead – (4G)

NOTE: The order of the modules is at the discretion of the instructor.

**Performance Requirements:**

Demonstrate the following welding skills and pass a visual inspection of the same.

- 1. Pads – 6010 and 7018 electrodes
- 2. T-Joint – 6010 and 7018 multiple pass welds
- 3. Corner Joint – 1G – 6010 and 7018
- 4. Corner Joint – 2G – 6010 and 7018
- 5. Corner Joint – 3G – 6010 and 7018
- 6. Corner Joint – 4G – 6010 and 7018

**Grading Practices and Procedures:** Tests and related homework will account for 40% of the overall grade. Progress in welding skills and participation in shop projects will account for 60% of the overall grade. Students will not pass on written exams and tests alone.

**Grading Scale:** (Based on overall percentage)

100-90	A
89-80	B
79-70	C
69-60	D
59-0	F

**Students with Disabilities:** It is the policy of the UAM College of Technology-Crossett to accommodate individuals with disabilities pursuant to federal law and the University's commitment to equal educational opportunities. It is the responsibility of the student to inform the instructor of any necessary accommodations at the beginning of the course. Any student requiring accommodations should contact the office of Special Student Services at 870-364-6414 or fax 870-364-5707.

**Disruptive Behavior:** College regulations, which serve to control all aspects of personal conduct, must be observed. The safety, rights, and feelings of others must be respected. A student may be suspended or dismissed from the school for conduct or personal habits which are not in the best interest of the student, fellow students, or the instructor.

**Attendance and Make-up Tests:** Regular and prompt attendance is expected of all students enrolled at UAM-CTC and is necessary to maintain satisfactory progress. Attendance will be recorded for each student by course. A student will be placed on attendance probation once he/she has been absent 15% of the total scheduled hours of a course.

When the student is absent 20% of the total scheduled hours of a course, the student will be officially notified in writing. A letter grade of "F" will be recorded for the course unless the student has officially withdrawn. Only students who officially withdraw before the official withdrawal date will receive a "W" in the course. A student will be notified of attendance probation in writing provided he/she has returned to school before reaching 20% absences. A student terminated for poor attendance may be considered for re-enrollment in the course at its next offering with the consultation and approval of the instructor and school administration.

A student cannot use make-up time to reduce hours of absence any time during the school year. Each time a student is late for class or leaves early, the student will be charged a full hour or hours of absence (rounded up to the larger hour of time).

In a case of extreme emergency, a student may request a leave of absence. A leave of absence must be requested in writing and may be granted or denied by the Director of Student Services. Written documentation supporting the request for a leave of absence must be provided prior to the granting of the leave or the first day back in class after the leave. The leave of absence must be for no less than seven (7) calendar days and for no more than 21 calendar days during a fall or spring semester or 10 calendar days during a summer term. If a student's absences reach 20% of the total class hours and the student has not been approved for a leave of absence, the student will receive an "F" in the course, unless the student withdraws by the allowable date to receive a "W." No more than one such leave of absence can be granted in a twelve-month period.

Upon receipt of proper documentation, absences caused by court subpoena, jury duty, military orders, or other government ordered visit(s) will be recorded but not included in the total cumulative hours of absence per course. The documentation must be submitted on the first day the student returns to school. Also, absences because of a natural disaster (as determined by the administration) will not be counted in the hours of absence.

Agencies granting financial assistance will be notified as required of all absences of those students receiving financial aid. The policy of each agency regarding payment when a student is absent will apply in each case.

**Cheating, Shop Rules, Attendance Policies, Internet Access Policy, Tool List** – See attached forms to be signed and dated by the student.

### IMPORTANT DATES FALL 2012

August 22 (Wed)	First day of classes.
August 22-28 (Wed through Tues)	Late registration. A \$25 late registration fee will be assessed.
August 22-28 (Wed through Tues)	Students may make schedule changes.
August 28 (Tues)	Last day to register or add fall classes.
September 3 (Mon)	Labor Day Holiday. All offices and classes closed.
October 5 (Fri)	Deadline to apply for <u>May</u> graduation
<b>October 31 (Wed)</b>	<b><i>LAST DAY TO DROP A REGULAR FALL CLASS (not applicable to fast-track classes). GRADE WILL BE W.</i></b>
November 5 (Mon)	Preregistration for spring begins.
November 16 (Fri)	Preregistration for spring ends.
November 20 (Tues)	All classes (day, evening, and distance education) will meet as usual.
November 21 (Wed)	Classes closed. University offices open.
November 22-23 (Thurs-Fri)	Thanksgiving Holiday. All offices and classes closed.
December 7 (Fri)	Last day of classes
December 10-14 (Mon)	Final Exams
December 19 (Wed)	Fall conferral of degrees and awards.

**UAM COLLEGE OF TECHNOLOGY-CROSSETT  
WELDING TECHNOLOGY PROGRAM  
WELD 1103 Blueprint Reading  
Course Syllabus  
Fall 2012**

**Instructor:** Jimmy DuBose, Telephone: 870-364-6414, ext. 160, or toll-free 1-866-323-3384  
**Instructor E-Mail:** dubose@uamont.edu  
**Fall Semester:** August 22- December 14, 2012  
**Class Meets:** Wednesday 1- 4 p.m.  
**Pre-requisite:** None  
**Office Hours:** 7:30 a.m.-8:00 a.m. M-Th  
**Course Title:** WELD 1103 Blueprint Reading, 3 credit hours (3 hrs lecture)  
**Required Text:** Print Reading for Welding and Fabrication, Arthur Corgan, ISBN: 9780135028179

**Course Description:** Blueprint Reading for welders studies the meaning of lines, views, size, descriptions, print, formats, fasteners, and types of fabrication drawings. Also covered are the various welding symbols prescribed by the American Welding Society for all standard production types of welds.

**Course/Student Learning Outcomes:** After successfully completing this course, an individual should be able to:

- Interpret welding prints
- Interpret welding symbols as related to prints

**Grading Practices and Procedures:** Tests and related homework will account for 40% of the overall grade. Progress in welding skills and participation in shop projects will account for 60% of the overall grade. Students will not pass on written exams and tests alone.

**Grading Scale:** (Based on overall percentage)

100-90	A
89-80	B
79-70	C
69-60	D
59-0	F

**Students with Disabilities:** It is the policy of the UAM College of Technology-Crossett to accommodate individuals with disabilities pursuant to federal law and the University's commitment to equal educational opportunities. It is the responsibility of the student to inform the instructor of any necessary accommodations at the beginning of the course. Any student requiring accommodations should contact the office of Special Student Services at 870-364-6414 or fax 870-364-5707.

**Disruptive Behavior:** College regulations, which serve to control all aspects of personal conduct, must be observed. The safety, rights, and feelings of others must be respected. A student may be suspended or dismissed from the school for conduct or personal habits which are not in the best interest of the student, fellow students, or the instructor.

**Attendance and Make-up Tests:** Regular and prompt attendance is expected of all students enrolled at UAM-CTC and is necessary to maintain satisfactory progress. Attendance will be recorded for each student by course. A student will be placed on attendance probation once he/she has been absent 15% of the total scheduled hours of a course.

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When the student is absent 20% of the total scheduled hours of a course, the student will be officially notified in writing. A letter grade of “F” will be recorded for the course unless the student has officially withdrawn. Only students who officially withdraw before the official withdrawal date will receive a “W” in the course. A student will be notified of attendance probation in writing provided he/she has returned to school before reaching 20% absences. A student terminated for poor attendance may be considered for re-enrollment in the course at its next offering with the consultation and approval of the instructor and school administration.

A student cannot use make-up time to reduce hours of absence any time during the school year. Each time a student is late for class or leaves early, the student will be charged a full hour or hours of absence (rounded up to the larger hour of time).

In a case of extreme emergency, a student may request a leave of absence. A leave of absence must be requested in writing and may be granted or denied by the Director of Student Services. Written documentation supporting the request for a leave of absence must be provided prior to the granting of the leave or the first day back in class after the leave. The leave of absence must be for no less than seven (7) calendar days and for no more than 21 calendar days during a fall or spring semester or 10 calendar days during a summer term. If a student’s absences reach 20% of the total class hours and the student has not been approved for a leave of absence, the student will receive an “F” in the course, unless the student withdraws by the allowable date to receive a “W.” No more than one such leave of absence can be granted in a twelve-month period.

Upon receipt of proper documentation, absences caused by court subpoena, jury duty, military orders, or other government ordered visit(s) will be recorded but not included in the total cumulative hours of absence per course. The documentation must be submitted on the first day the student returns to school. Also, absences because of a natural disaster (as determined by the administration) will not be counted in the hours of absence.

Agencies granting financial assistance will be notified as required of all absences of those students receiving financial aid. The policy of each agency regarding payment when a student is absent will apply in each case.

**Cheating, Shop Rules, Attendance Policies, Internet Access Policy, Tool List** – See attached forms to be signed and dated by the student.

**IMPORTANT DATES FALL 2012**

August 22 (Wed)	First day of classes.
August 22-28 (Wed through Tues)	Late registration. A \$25 late registration fee will be assessed.
August 22-28 (Wed through Tues)	Students may make schedule changes.
August 28 (Tues)	Last day to register or add fall classes.
September 3 (Mon)	Labor Day Holiday. All offices and classes closed.
October 5 (Fri)	Deadline to apply for <u>May</u> graduation
<b>October 31 (Wed)</b>	<b><i>Last day to drop a regular fall class (not applicable to fast-track classes). Grade will be W.</i></b>
November 5 (Mon)	Preregistration for spring begins.
November 16 (Fri)	Preregistration for spring ends.
November 20 (Tues)	All classes (day, evening, and distance education) will meet as usual.
November 21 (Wed)	Classes closed. University offices open.
November 22-23 (Thurs-Fri)	Thanksgiving Holiday. All offices and classes closed.
December 7 (Fri)	Last day of classes
December 10-14 (Mon)	Final Exams

**UAM COLLEGE OF TECHNOLOGY-CROSSETT  
WELDING TECHNOLOGY PROGRAM  
WELD 1215 Shielded Metal Arc Welding (SMAW)  
Course Syllabus  
Fall 2012**

**Instructor:** Jimmy DuBose, Telephone: 870-364-6414, ext. 160, or toll-free 1-866-323-3384  
**Instructor E-Mail:** dubose@uamont.edu  
**Fall Semester:** August 22 - December 14, 2012  
**Class Meets:** Tuesday & Thursday – 8:00 a.m. - 12:30 p.m.  
**Co-requisite:** WELD 1115 or permission of instructor and administration  
**Office Hours:** 7:30 a.m.-8:00 a.m. M-Th  
**Course Title:** WELD 1215 Shielded Metal Arc Welding, 5 credit hours (2 hrs lecture, 9 hrs lab)

**Required Text:** NCCER Contren Learning Series Trainee Guide, Level One, 4<sup>th</sup> Edition,  
Prentice Hall. ISBN: 9780136099673

**Course Description:** Arc Welding is designed to give students knowledge of equipment, safety precautions and shop practice. Students will make basic types of welds in most positions and study welding nomenclature, design of joints, and electric classifications.

**Course/Student Learning Outcomes:** After successfully completing this course, an individual should be able to:

- I. Module 29101-09 - Welding Safety
  - a. Identify some common hazards in welding
  - b. Explain and identify proper personal protection
  
- II. Module 29102-09 – Oxy-Fuel Cutting
  - a. Identify and explain the use of oxy-fuel cutting equipment
  - b. Set up oxy-fuel equipment
  - c. Light and adjust torch
  - d. Change cylinders
  - e. Perform oxy-fuel cutting
  
- III. Module 29103-09 – Plasma Arc Cutting
  - a. Explain the plasma arc cutting processes
  - b. Prepare and set up plasma arc equipment
  
- IV. Module 29104-09 – Air Carbon Arc Cutting and Gouging
  - a. Identify and explain the air carbon arc cutting (CAC-A) process and equipment.
  
- V. Module 269105-09 – Base Metal Preparation
  - a. Clean base metal for welding or cutting
  - b. Identify and explain joint design
  
- VI. Module 29106-09 – Weld Quality
  - a. Identify and explain codes governing welding
  - b. Identify and explain weld imperfections and their causes



- VII. Module 29107-09 – SMAW – Equipment and Setup
  - a. Identify and explain shielded metal arc welding (SMAW) safety
  - b. Explain welding electrical current
  - c. Set up a machine for welding
  
- VIII. Module 29108-09 - Shielded Metal Arc Electrodes
  - a. Identify different types of filler metals
  - b. Identify and select the proper electrode for a specified welding task
  
- IX. Module 29109-09 - SMAW – Beads and Fillet Welds
  - a. Set up (SMAW) equipment
  - b. Describe methods of striking an arc
  - c. Make stringer, weave and overlapping beads
  - d. Make fillet welds in the following positions:
    - 1. Horizontal (2F)
    - 2. Vertical (3F)
    - 3. Overhead (4F)
  
- X. Module 29110-09 – Joint Fit-up and Alignment
  - a. Check for joint misalignment and poor fit-up before and after welding
  - b. Identify and explain distortion and how it is controlled
  
- XI. Module 29111-09 – SMAW – Groove Welds with Backing
  - a. Identify and explain groove welds
  - b. Identify and explain groove welds with backing
  - c. Perform (SMAW) for v-groove welds with backing in the following positions:
    - 1. Flat – (1G)
    - 2. Horizontal – (2G)
    - 3. Vertical – (3G)
    - 4. Overhead – (4G)
  
- XII. Module 29112-09 – SMAW – Open V-Groove Welds
  - a. Prepare (SMAW) equipment for open-root v-groove welds
  - b. Perform open-root v-groove welds in the following positions:
    - 1. Flat – (1G)
    - 2. Horizontal – (2G)
    - 3. Vertical – (3G)
    - 4. Overhead – (4G)

NOTE: The order of the modules is at the discretion of the instructor.

**Performance Requirements:**

Demonstrate the following welding skills and pass a visual inspection of the same.

- 1.
  - a. V-groove – 1G – 6010 root pass and 7018s fill and cap on 3/8” plate
  - b. V-groove – 2G – 6010 root pass and 7018s fill and cap on 3/8” plate
  - c. V-groove – 3G – 6010 root pass and 7018s fill and cap on 3/8” plate
  - d. V-groove – 4G – 6010 root pass and 7018s fill and cap on 3/8” plate
- 2. Exhibit safe work practices in lab

3. Optional: Certify in all positions (SMAW) structural steel, either to AWS D1.1 Welding Code and/or ASME Welding Code Section IX

**Grading Practices and Procedures:** Tests and related homework will account for 40% of the overall grade. Progress in welding skills and participation in shop projects will account for 60% of the overall grade. Students will not pass on written exams and tests alone.

**Grading Scale:** (Based on overall percentage)

100-90	A
89-80	B
79-70	C
69-60	D
59-0	F

**Students with Disabilities:** It is the policy of the UAM College of Technology-Crossett to accommodate individuals with disabilities pursuant to federal law and the University's commitment to equal educational opportunities. It is the responsibility of the student to inform the instructor of any necessary accommodations at the beginning of the course. Any student requiring accommodations should contact the office of Special Student Services at 870-364-6414 or fax 870-364-5707.

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unless the student withdraws by the allowable date to receive a “W.” No more than one such leave of absence can be granted in a twelve-month period.

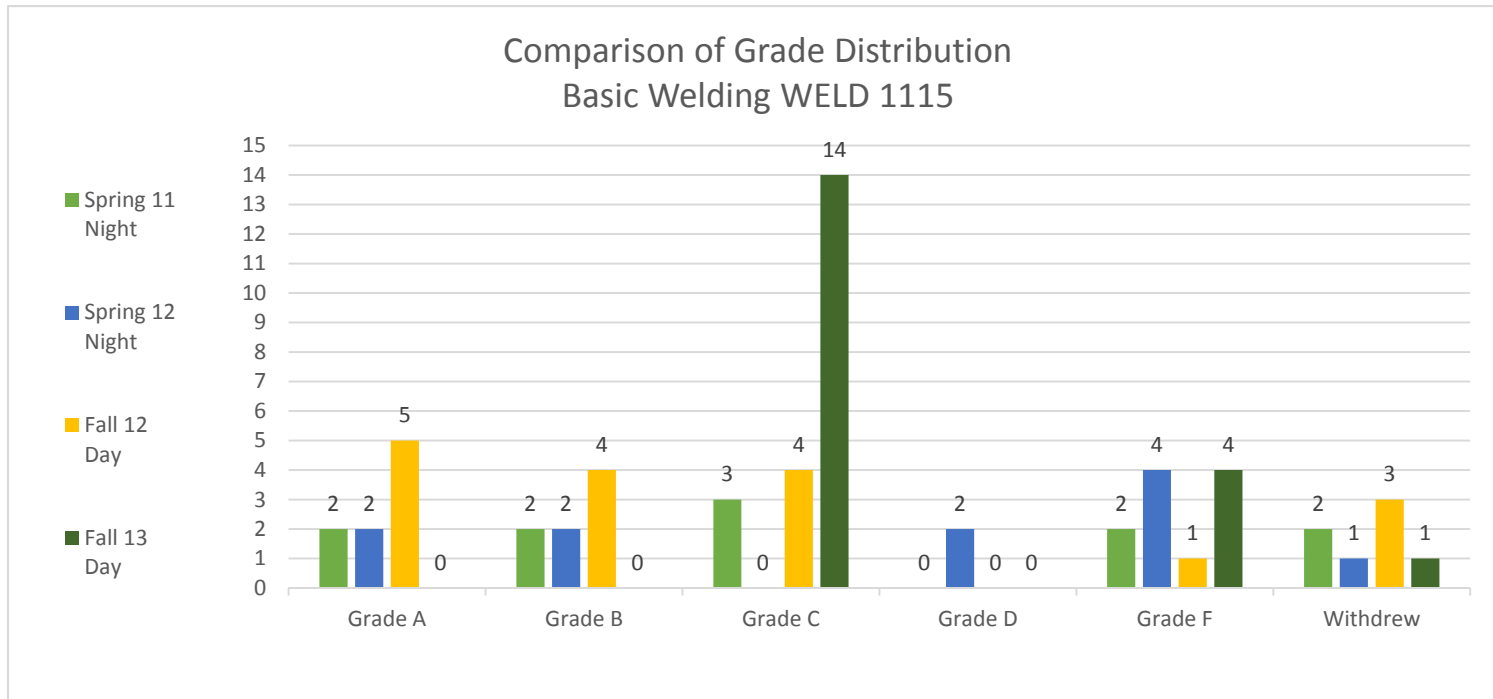
Upon receipt of proper documentation, absences caused by court subpoena, jury duty, military orders, or other government ordered visit(s) will be recorded but not included in the total cumulative hours of absence per course. The documentation must be submitted on the first day the student returns to school. Also, absences because of a natural disaster (as determined by the administration) will not be counted in the hours of absence.

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<b>October 31 (Wed)</b>	<b><i>LAST DAY TO DROP A REGULAR FALL CLASS (not applicable to fast-track classes). GRADE WILL BE W.</i></b>
November 5 (Mon)	Preregistration for spring begins.
November 16 (Fri)	Preregistration for spring ends.
November 20 (Tues)	All classes (day, evening, and distance education) will meet as usual.
November 21 (Wed)	Classes closed. University offices open.
November 22-23 (Thurs-Fri)	Thanksgiving Holiday. All offices and classes closed.
December 7 (Fri)	Last day of classes
December 10-14 (Mon)	Final Exams
December 19 (Wed)	Fall conferral of degrees and awards.



WELD 1115 as a 1<sup>st</sup> semester course. In Spring 2011 and Spring 2012 all courses were offered at night.

Spring 11 (Night) 7/11 students passed = 64%

Spring 12 (Night) 6/11 students passed = 45%

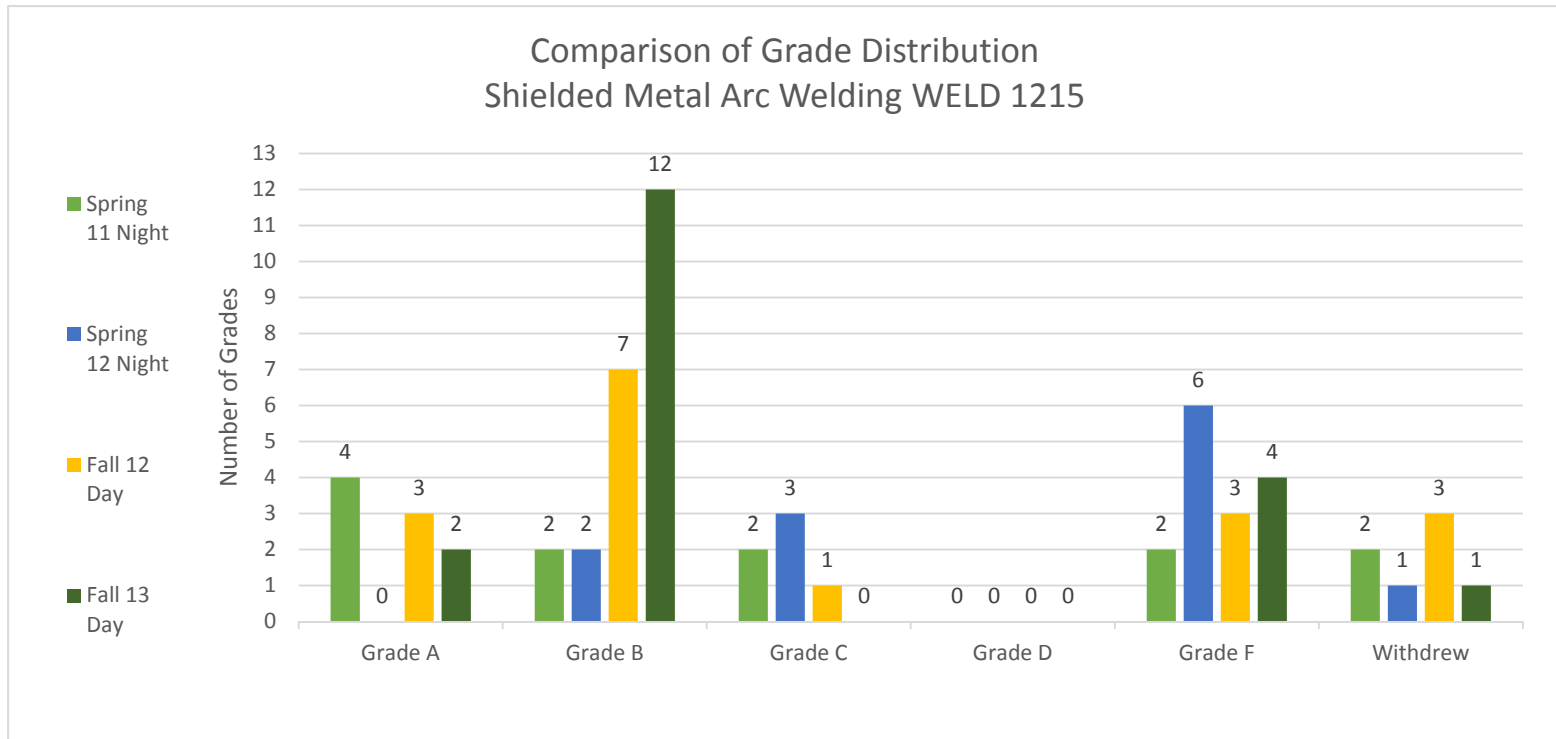
In Fall 2012 the program was changed to a day program, and students' grades indicated a significant improvement.

Fall 12 (Day) 13/17 students passed = 76%

Fall 13 (Day) 14/19 students passed = 74%

The type of student changed from the majority being individuals already in the workforce to younger adults who were preparing to enter the workforce with a long-term career.

Enrollment also increased from an average of 11 to an average of 18 students.



WELD 1215 is a 1<sup>st</sup> semester course. In Spring 2011 and Spring 2012 all courses were offered at night.

Spring 11 (Night) 8/12 students passed = 67%

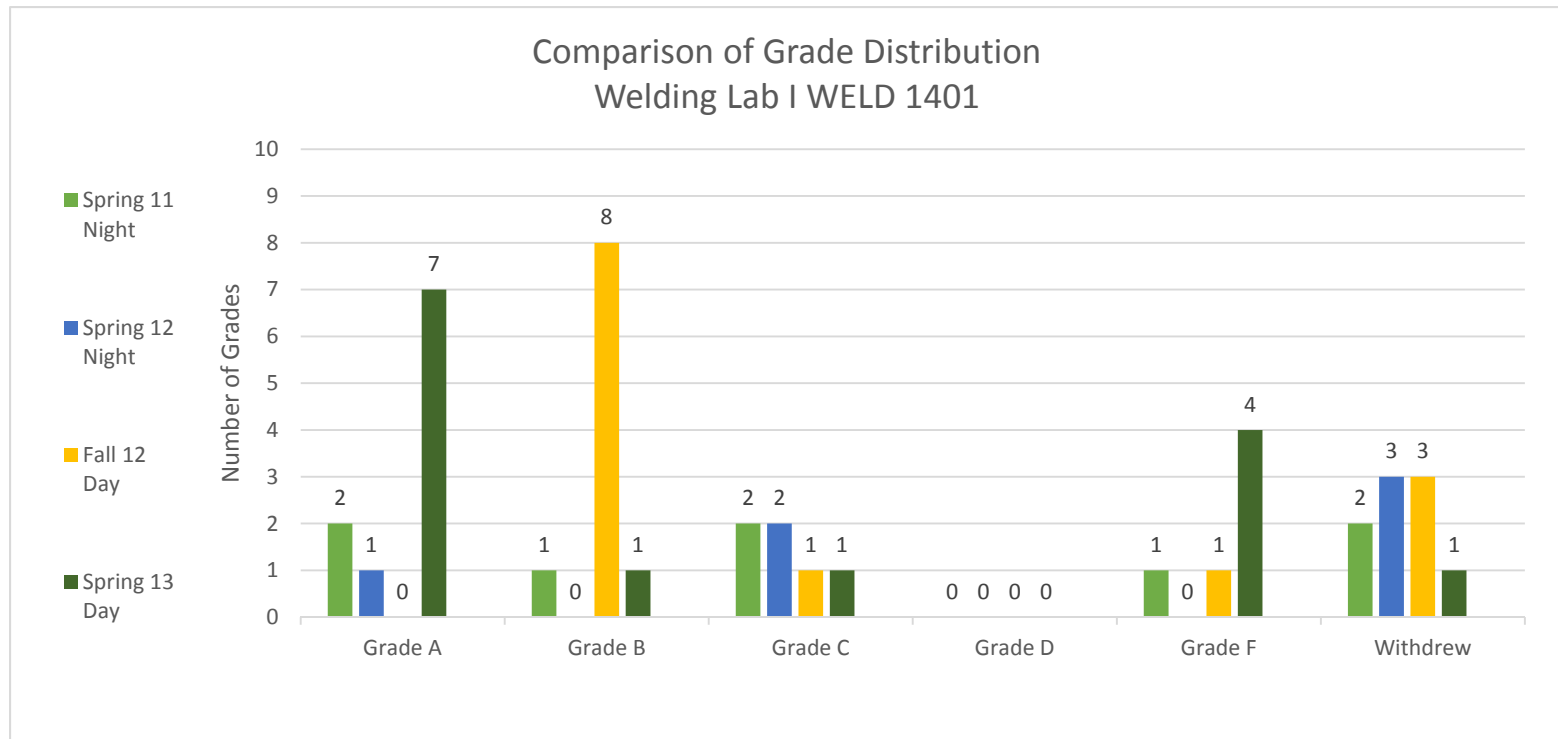
Spring 12 (Night) 5/12 students passed = 42%

In Fall 2012 the program was changed to a day program, and students' grades indicated a significant improvement.

Fall 12 (Day) 11/17 students passed = 64%

Fall 13 (Day) 12/17 students passed = 82%

Enrollment also increased from an average of 12 to an average of 17 students.



WELD 1401 is a 1<sup>st</sup> semester course. In Spring 2011 and Spring 2012 all courses were offered at night.

Spring 11 (Night) 5/8 students passed = 63%

Spring 12 (Night) 3/6 students passed = 50%

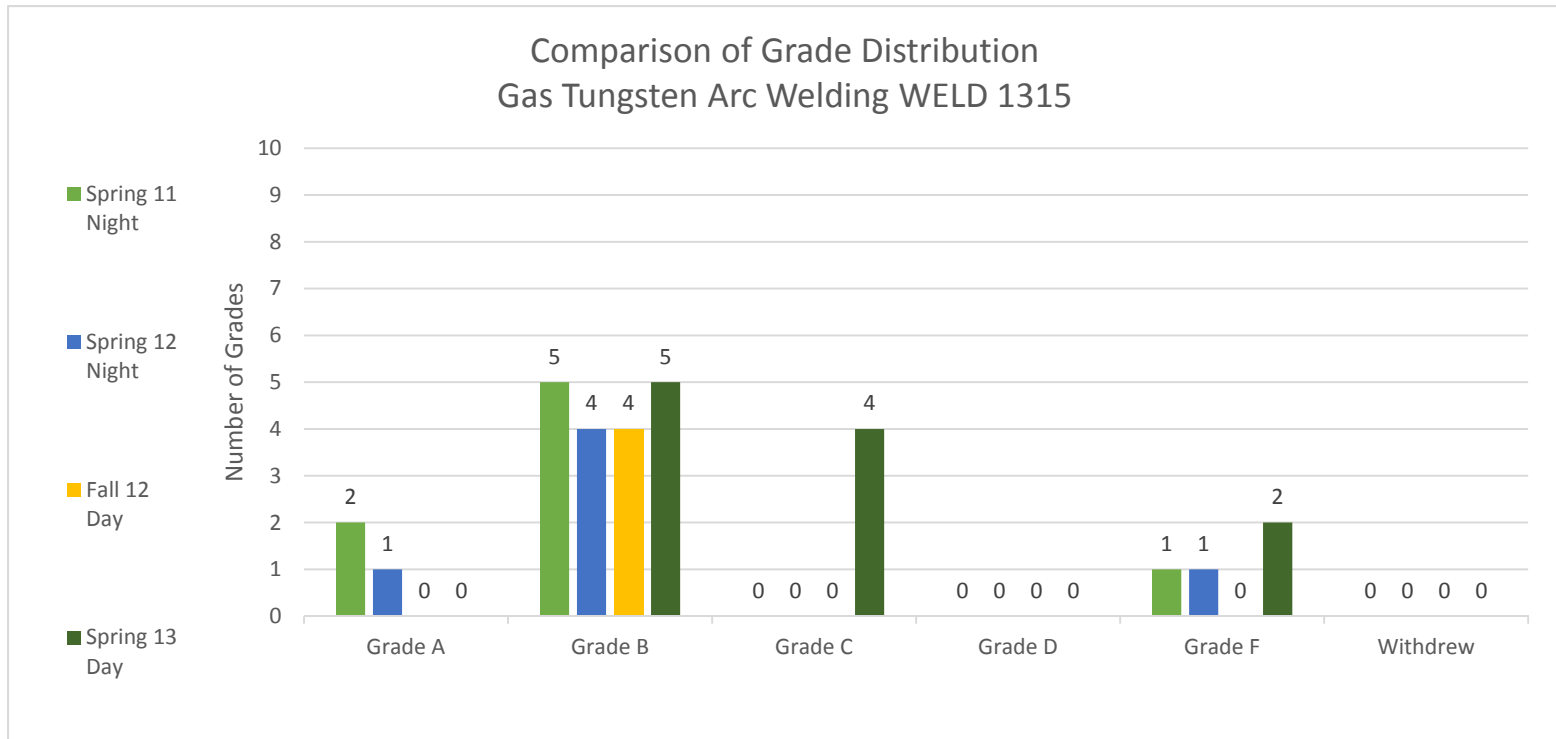
In Fall 2012 the program was changed to a day program, and on the first offering students' grades indicated a significant improvement.

For this course, the pass rate for Spring 2013 was not much better than the previous night courses for reasons unknown.

Fall 12 (Day) 8/12 students passed = 75%

Spring 13 (Day) 9/14 students passed = 64%

Enrollment also increased in this course from an average of 7 to an average of 13 students.



WELD 1315 is a 2<sup>nd</sup> semester course. In Spring 2011 and Spring 2012 all courses were offered at night.

Spring 11 (Night) 7/8 students passed = 86%

Spring 12 (Night) 4/5 students passed = 90%

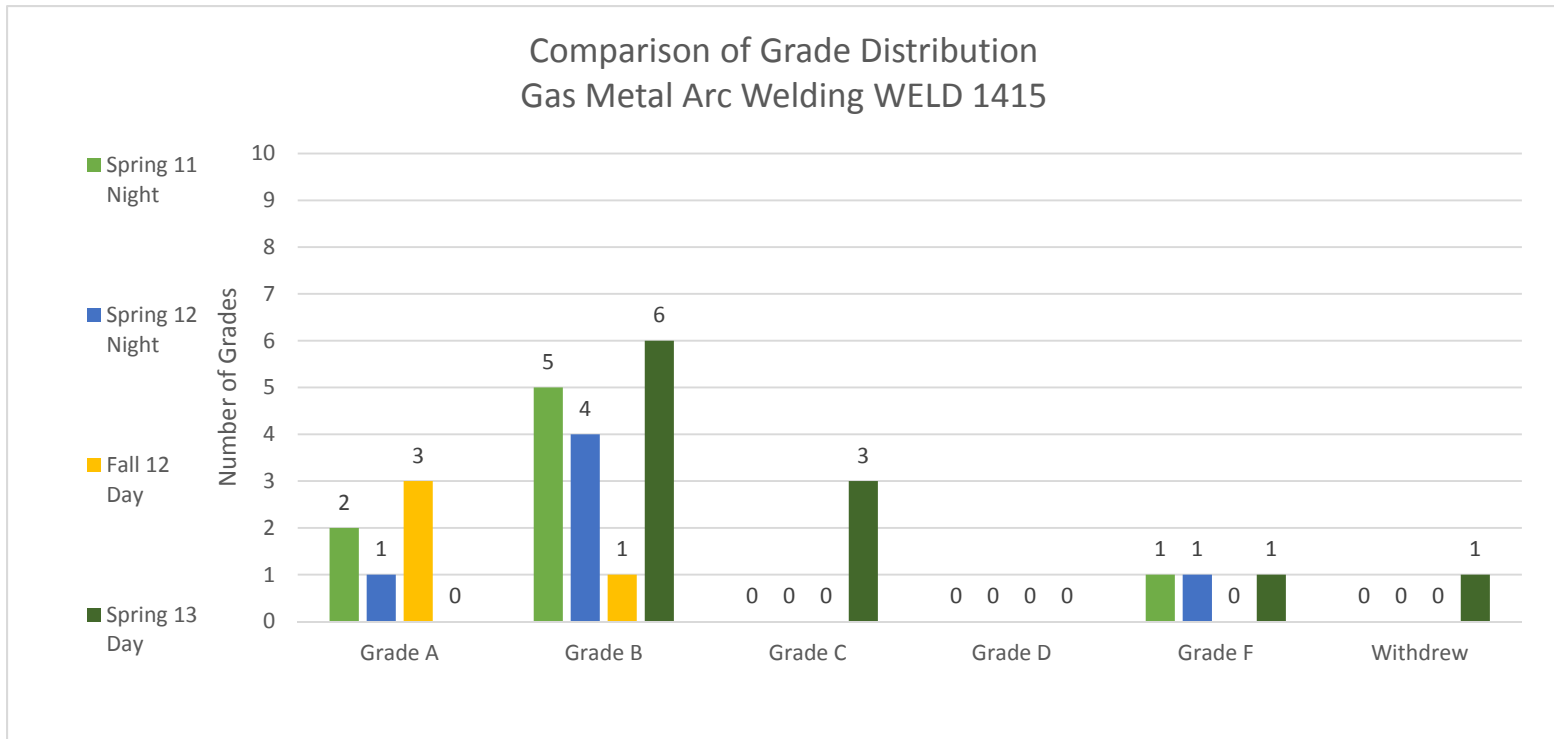
In Fall 2012 the program was changed to a day program.

Fall 12 (Day) 4/4 students passed = 100%

Spring 13 (Day) 9/11 students passed = 82%

Because this is a 2<sup>nd</sup> semester course, students who have continued from the prerequisite courses (WELD 1115 and WELD 1215) have proven that they have an aptitude for basic welding; therefore, changing to a day program did not make a significant difference. The Fall enrollment of four out of four who passed the course were students who would have begun the program when it was offered at night – thus the small enrollment. The enrollment of 11 for the Spring 13 course was due to the increased enrollment of new day students who started in Fall 12.





WELD 1415 is a 2nd semester course. In Spring 2011 and Spring 2012 all courses were offered at night.

Spring 11 (Night) 7/8 students passed = 88%

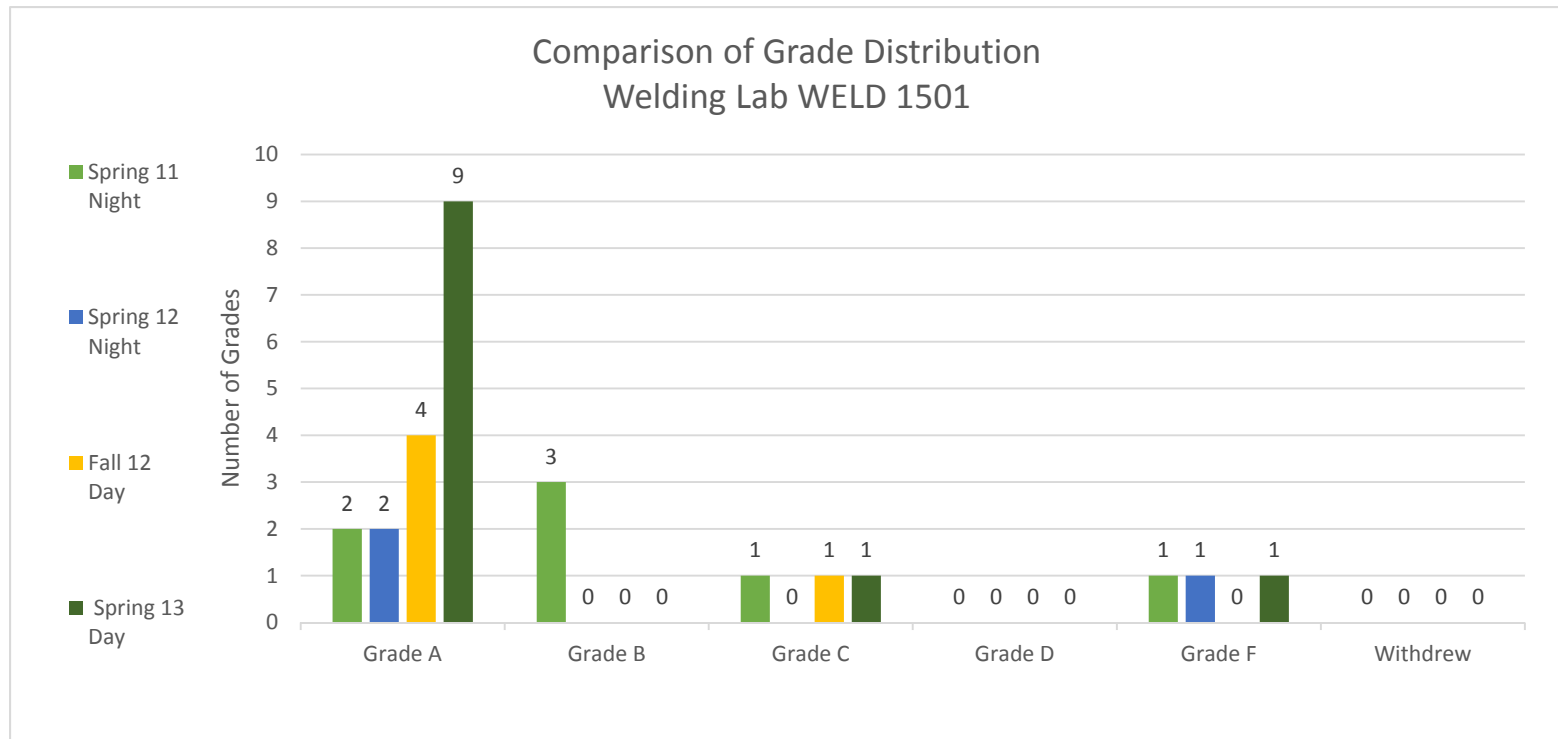
Spring 12 (Night) 5/6 students passed = 83%

In Fall 2012 the program was changed to a day program, and students' grades indicated a significant improvement.

Fall 12 (Day) 4/4 students passed = 100%

Fall 13 (Day) 9/11 students passed = 82%

Because this is a 2<sup>nd</sup> semester course, students who have continued from the prerequisite courses (WELD 1115 and WELD 1215) have proven that they have an aptitude for basic welding; therefore, changing to a day program did not make a significant difference. The Fall enrollment of four out of four who passed the course were students who would have begun the program when it was offered at night – thus the small enrollment. The enrollment of 11 for the Spring 13 course was due to the increased enrollment of new day students who started in Fall 12.



WELD is a 2<sup>nd</sup> semester course. In Spring 2011 and Spring 2012 all courses were offered at night.

Spring 11 (Night) 6/7 students passed = 85%

Spring 12 (Night) 2/3 students passed = 67%

In Fall 2012 the program was changed to a day program. Grades show a significant improvement for Spring 13 compared to Spring 12.

Fall 12 (Day) 5/5 students passed = 100%

Spring13 (Day) 10/11 students passed = 91%

Because this is a 2<sup>nd</sup> semester course, students who have continued from the prerequisite courses (WELD 1115 and WELD 1215) have proven that they have an aptitude for basic welding; therefore, changing to a day program did not make as much of an improvement as the first semester courses. The Fall enrollment of five out of five who passed the course were students who would have begun the program when it was offered at night – thus the small enrollment. The enrollment of 11 for the Spring 13 course was due to the increased enrollment of new day students who started in Fall 12.

## Welding Rubric

Type of Weld/Project: \_\_\_\_\_

Student's Name: \_\_\_\_\_ Date: \_\_\_\_\_

Characteristics	Exceptional 5 Points	Advanced 4 Points	Proficient 3 Points	Basic 2 Points	Below Basic or Unacceptable 0-1 Point	Points Earned
<b>Slag:</b>	100% removed. All slag chipped. Weld bead is clean.	Bead is clean; has been chipped and wire brushed.	Bead is somewhat clean. Minimal slag at the edges of the bead.	Bead needs major chipping and brushing.	Shows little care about quality.	
<b>Weld Width &amp; Height:</b>	100% uniform width and thickness throughout the entire length of each weld.	Bead is uniform width all along the length of each weld. Has a smooth appearance.	Bead maintains width and length. Shows some small blemishes along the weld.	Not a uniform thickness throughout the weld. Thickness goes to extremes.	Weld is cut off in places; not uniform along the weld. Shows bare spots.	
<b>Appearance:</b>	100% smooth with uniform dense ripples; doesn't show the bead traveling too fast or slow.	Weld shows a constant speed and uniformity the entire length.	Weld shows a constant speed with some blemishes that are minimal.	Weld shows definite areas of speeding up and slowing down. Ripples tend to be coarse.	Weld has been done too fast or too slow. Weld is not complete. Impurities are trapped in the weld.	
<b>Face of Bead:</b>	100% convex; free of voids and high spots, shows uniformity throughout the bead.	Has a nice rounded look. Is not overly high or low. Bead covers a wide area of each weld.	Bead is well rounded; mostly uniform over the length of the weld. Shows some high spots and low spots.	Bead shows many high and low areas. Total lack of uniformity throughout the weld.	Weld does not blend into one single bead.	
<b>Edge of Bead:</b>	100% good fusion; no overlapping or undercutting.	Sides and edges are smooth blending into each weld. Undercutting kept to a minimum. Weld does not float on surface.	Moderately smooth blending. Undercutting and float are present. Strength of the weld is still strong.	Float and undercut are very apparent. Weld lacks strength and flow.	Metal is burned through. Weld has no connection to metal.	
<b>Beginning and Ending Full Size:</b>	100% crater well filled.	End of each weld is complete; the line does not taper off.	Weld ending is full but shows some tapering and a crater present.	Crater distinctly present at the end of the bead.	Metal is burned through at the end.	
<b>Surrounding Plate/Pipe:</b>	100% welding surface free of spatter.	Spatter is kept to a minimum.	Some spatter is present but not displeasing.	Spatter is in large amounts.	Splatter takes away from the integrity of the weld.	
<b>Penetration:</b>	100% complete without burn through	Weld penetrates deeply into the metal and adds strength and fusion to the edges and depth.	Weld penetrates deeply but does not re-surface through the bottom of jointed welds.	Weld is uneven in depth; lacks uniformity along weld length.	Weld floats on top of the metal; has no strength,	
<b>Total Points Earned</b>						
<b>Divided by total points possible (40) =</b>						<b>%</b>