

School of Professional and Technical Specialties Course Syllabus



Course Abbreviation: WLD **Number:** 1005

Course Title: Related Welding

Number of credits: 3

Number of lecture hours per week: 1

Number of lab hours per week: 3

Course Description: Learn basic practical welding skills using a variety of welding processes, i.e.: oxy- acetylene, Shielded Metal Arc, Gas Metal Arc and Flux Cored Arc on carbon steel. Safe practices and theory are taught. oxy- acetylene cutting techniques are also explored in this course.

Course Prerequisites: Good eyesight (Corrective prescription lenses are okay), good eye-hand coordination, able to lift 50 lbs.

Instructor:

Email:

Phone:

Course Objectives: At the completion of this course, students shall have demonstrated to the instructor safe shop and process practices and introductory level skills in the following:

- Oxy- Acetylene Equipment set-up and proper flame adjustment
- Fusion welding skills with OAW on outside corner joints
- Braze welding Skills on outside corner joints
- Manual OAC Flame cutting
- Identify good and bad welds and assess what creates discontinuities in welds and make the necessary corrections to eliminate them.
- SMAW equipment setup
- Striking & controlling the electric arc
- Lap joints, outside corner joints
- GMAW and FCAW equipment set-up
- Surfacing (Padding) applications

Required Textbook: Welding Fundamentals. William A. Bowditch/Kevin E. Bowditch/ Mark A. Bowditch 6th edition. IBSN978-1-63126-328-6

Proper welder personal protective equipment (PPE) is required to be used by all students working in the welding lab. Below is a list of items that you will need for this class.

Supplementary Materials:

Items Needed Right Away for Class:

Protective clothing (cotton or denim)

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Welding cap

Safety glasses

Leather welding gloves

Leather high top boots

Stricker

Pliers

Vise Grips

Googles shade #5 lens

Items to Purchase Later (Still required but not needed right away)

Chipping hammer

Wire brush

Welding helmet with #10 shade lens

Soapstone with Holder (optional)

Tip cleaner (optional)

Leathers (optional but recommended)

Class Format:

1. Students are required to be to class every session and on time. To actively participate in class and use all equipment that is required in the class. If any student leaves before talking to his or her instructor, the student will be counted absent for the day!
2. Students will receive several reading assignments and will be tested upon completion of those assignments.
3. The student will be graded in Lab by passing off the required welding techniques as out lined by the instructor and may only be passed off as they are done to the satisfaction of the instructor.

Grading System:

All assignments and tests for the semester will be averaged.

Results will be as follows:

A= 90-100 %

B = 80-89 %

C= 70-79 %

D= 60-69 %

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E= 0-59 %

I = Incomplete

Required Assessment:

- Completion of OAW safety exam with 100% accuracy and safe performance during lab activities.
- Faculty evaluation of student competencies and submitted written work.

Philosophy:

Students attend SLCC to learn. As such, students can expect a rigorous course of instructions. As an applied technology, welding is pervasive in our everyday lives. For students entering the engineering, design, or applied technology field, this may be the only welding instruction you will receive. It is expected that students attend class regularly and one time to ensure they make satisfactory progress toward course completion. Students are expected to spend the appropriate amount of time reading, participating in lecture and lab, and studying to completely learn the subject matter.

Instructor's Responsibilities:

The instructor(s) will, to the best of their ability, be prepared for each class session and ensure that you have the materials, equipment, and items required for completing the learning activities. It is also the responsibility of the instructor to assist you in the learning process and to accomplish the goals of the program. The instructor will also monitor and help to ensure satisfactory progress. The instructor will also address any issues that impact the student's progress in the course during the semester.

Course Content:

Unit I-----Theory

- a. Shop Safety
- b. Welding Safety
- c. Oxy-acetylene Equipment & Operation
- d. Shielded Metal Arc Welding Equipment Operation
- e. Gas Metal Welding Equipment Operation
- f. Flux Core Welding Equipment
- g. Related information

Unit II----- Oxy-Acetylene Practice (Flat and Horizontal Position)

- a. Outside Comer Joints

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- b. Braze Welding
- c. Torch cutting (OAC)

Unit III----- Shielded Metal Arc Welding Practice (SMAW)

- a. Outside Comer Joints
- b. Lap Joints

Unit IV ----- Gas Metal Arc Welding (GMAW) Flux Core Arc Welding (FCAW-S)

- a. Outside Comer Joints
- b. Lap Joints

Special Instructions

Because of the nature of the environment students will be working in; there are special rules that must be adhered to with zero tolerance.

- See the instructor immediately if you have an emergency.
- Use of cell phone for calls, texting, or internet will not be allowed in the shop floor. Cell phones may be used in the classroom, but they must be on silent or vibrate mode. If you receive a call, please leave the classroom briefly. Making a call or texting during class should be restricted for emergency purposes only.
- No profanity will be tolerated in class or lab.

General Lab Safety Rules

1. Safety glasses are to be always worn while in the welding lab.
2. Face shields and safety glasses are to be worn when using the grinders.
3. Wear proper protective clothing while performing welding & cutting operations.
4. THINK before you DO!
5. No horseplay will be tolerated in the welding lab!
6. Students, Faculty & Staff are required to adhere to Utah State Law and SLCC Policy regarding legally controlled substances, i.e.: Alcoholic beverages, Tobacco products, Vaporizers, drugs etc.
7. Report ALL accidents or injuries to your instructor as soon as they happen.
8. Treat all equipment as potential hazard.

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9. Make sure compressed gas cylinders are secured when in use or storage.
10. Close compressed gas cylinder valves when not in use.
11. Make sure protective valve caps are secure on the compressed gas cylinders during moving and storage.
12. Do not burn weld material lying on concrete.
13. Use pliers or clamps to handle hot materials. (NOT GLOVES!)
14. Contain long hair with welding caps or other suitable protective wear.
15. Do not weld on or near compressed gas cylinders.
16. Do not use gasoline powered machines inside of the building.
17. Use ventilation fans when welding and/or cutting operations are being done in the lab.

Welding Lab Policies & Procedures

- * All welding students are to complete the Welding Safety exam with 100% accuracy prior to working in the welding lab.
- * No students are to be working in the welding lab without the presence of an instructor. No permission is to be granted to a student to work in the lab other than their regular class period without the consent of any faculty member who will be present during that time.
- * Room WTEC-xxx is tool room. This room is not to be accessed by students without the accompaniment of an instructor or the tool room attendant.
- * The welding lab has a Lab Coordinator for the day and a tool room attendant for the evening class times. These positions will be responsible to check out any and all tools or other material and equipment as needed.
- * ALL students are responsible for their individual areas to be cleaned at the end of each class period. All booths and floor areas are to be cleaned and swept daily and maintained in good condition which meets OSHA and industry standards.
- * NO ONE is to use any equipment without first obtaining task training and proving competent in safety procedures in its operation and function. No students should use the shear without the presence and instruction from a welding faculty member. Strict adherence to the size of plate, cut procedures, and materials used are to be enforced.
- * Student and class projects need to be approved by faculty and consideration should be given to size, appropriateness for class, and storage during constructions.
- * Be conservative with consumable materials, i.e. use welding electrodes down to two-inch stubs; use OAW filler rod completely by welding stuffs to long rods; return unused and partially used welding electrodes and welding rods to their proper storage container; use practice materials (sheet, plate, pipe, etc.) efficiently. DO NOT through way and usable materials!
- * Place scrap metal in the proper disposal containers.
- * DO NOT weld on welding tables, clamps, fixtures.
- * Students suspected of attending class while under the influence of drugs and/or alcohol will

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- be asked to leave. Continuation of this type of behavior termination from the class.
- * Lab telephones and computers are for official college use and are not to be used by students.
 - * Mobile phones and audio devices, i.e. cell phones, MP3 players, portable stereos, electronic wearables (wireless headphones, watches), etc. are not allowed in the lab. Any device that detracts from being alert to inherent dangers or warning sounds are not to be used in the lab.
 - * Students enrolled in courses where learning activities take place in the welding lab are required to have general safety instruction provided. The content of which must include items of general nature as will be found in venues that employ welding personnel. (Reverence.: AWSZ49.1 SAFETY IN WELDING AND CUTTING AND ALLIED PROCESSES). An assessment of the content learned by the student is required. No student shall be permitted to work in the welding lab with an assessment score lower than 100%.
 - * Students enrolled in courses where learning activities take place in the welding lab are required to have process specific safety instruction provided. The content of which must include items consistent with the safe use and operation of the welding process being taught. An assessment of the content learned by the student is required. No student shall be permitted to work in the welding lab with an assessment score lower than 100%.
 - * Students are allowed to work in the welding lab only during their scheduled lab time (SLCC Policy). An instructor from the welding department must be present in the welding lab anytime students are working.
 - * The Tool Room is NOT accessible to welding students. In extenuating circumstances, students may enter the tool room ONLY when accompanied by an instructor, Lab Coordinator, or Tool Room Attendant.
 - * Students are required to “sign out” and “sign in” tools and/or equipment acquired from the tool room through the tool room service window.
 - * Students are responsible to clean their individual work areas (Welding stations and/or booths) at the end of each class period. Clean worktables by sweeping off loose material, sweep floors, neatly hang hoses & cable, remove welding rods & electrodes from holders, sweep off power sources, scrap loose spatter from welding tables & fixtures, etc.
 - * It is expected that students who have worked in a general use area of the lab (i.e.: Grinding room, OAC Track Torch, CNC Plasma Torch, Air-Arc rooms, etc.) during their lab time help clean up these areas at the end of their lab class.
 - * Complete task training is required for each piece of equipment in the welding lab prior to use. A comprehensive assessment of user competency is required prior to use. Minimum acceptable test score is 80%. **STUDENTS ARE NOT AUTHORIZED TO USE THE PLATE SHEAR!**
 - * Conservation of consumable materials used for instruction purposes shall be observed. This includes all base materials, Filler materials, Welding electrodes, Welding gases, etc.
 - * Recycle all metals. Place scrap in its proper container: Ferrous Metals; Aluminum Alloys, Copper Alloys, Stainless Steels.
 - * Clamps and fixtures for holding practice weldments are provided in each welding booth and OAW workstation. It is expected that these devices be kept in good operating condition. **DO**

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NOT force or overtighten clamps and fixtures!

- * Due to regular use and normal wear and tear, these devices will eventually require maintenance. Students shall inform their instructor of malfunctioning fixturing devices. Instructors shall teach students how to make repairs to these fixtures and assist them as necessary. **WELDING ON WRORKSTATION OR BOOTH FIXTURES AS A TERMPORARY REPAIR IS CONSIDERED VANDALIZUM. DO NOT WELD ON TABLES OR FIXTURES!!!** **DISIPLINARY ACTOIN WILL BE REQUIRED UPON VIOLATION OF THIS POLICY.**
- * **DO NOT** weld practice weldments on worktable tops. Use the clamps and fixtures that are provided.
- * Face shields are required PPE for all grinding, power sanding, power wire brushing operations, and use of metal cut-off wheels.
- * Safety glasses shall be worn upon always entering the welding lab and while students are working in the lab. Safety glasses shall have clear lenses. Shaded lenses are not approved for indoor use and will NOT be allowed in the welding lab.
- * Behavior deemed to be "Horse Play" or "Harassment" has no place in the welding lab and will not be tolerated. Please refer to the SLCC Student Coode of Conductor for interpretation.
- * Compressed gas cylinders shall have protective valve caps in places when cylinders are not in use. Cylinders shall not be moved without the protective valve caps in place. Gas cylinders shall be secured when being moved or stationary.
- * Ventilations fans shall be used while welding and/or cutting operations are taking place in the welding lab.
- * White boards located in welding booths are for instructor use only. Only erasable white boards markers are to be used.
- * No graffiti activity, which includes, markers, spray paint, stickers, etc. shall take place at any location on SLCC property. Notice: Security cameras are in use everywhere.
- * NO food in the welding lab or classrooms!
- * All instructors are responsible to enforce department and college policies. Instructors may halt any activity deemed to be unsafe, hazardous, unlawful, or of nonconformance to welding department/SLCC policy, etc. This policy crosses all boundaries regardless of whether involved parties are THAT instructors' students or not.

Cellular Phone & Electronic Device Use

Cellular phones will be set to silent mode before entering the classroom.

No electronic devices or cell phones are allowed in the welding lab.

If the phone does not have a silent option, it must be turned off while in class. CELL PHONES ARE NOT TO BE ANSWERED in the classroom. In extenuating circumstances, such as an emergency, excuse yourself, leave the classroom, and either answer or return the phone call in a non-disturbing area (please abstain from using your cellphone outside the classroom doors – it is extremely disruptive). While a student is taking an examination, his or her cell phone MUST be in the OFF MODE and NOT accessible to the student.

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Emergency Procedures

- In the event of an emergency and should the Westpointe campus need to be evacuated, you are to go out the closest open exit and assemble at the [northwest corner](#) of the parking lot.
- **DO NOT** leave as your instructor must account for your whereabouts. Instructors must take roll to account for all their students.
- Always leave the building immediately. Turn off equipment and lights and close the door behind you. (A closed door will limit the spread of heat and smoke and will also act as a fire barrier and can serve as a theft deterrent in case of other evacuations.) Do not take personal belongings.
- **Use stairways to exit. Never use an elevator as an emergency exit.**
- As you evacuate the building:
 - Please be aware of individuals with disabilities who are also trying to leave the building and help where you can. The College has placed devices called Evacu-Trac in many buildings to assist in the evacuation of individuals who use wheelchairs or have mobility challenges. For assistance in evacuating an individual with a disability, contact your Building Marshal, or the Department of Public Safety. Know where the nearest Evacu-Trac Device is located and learn how to use it.
 - [EvacuTract Training Video](#)
 - If you encounter individuals who are ignoring the fire alarm or the request to evacuate, instruct them to leave the building immediately. If they do not respond, report their location to building marshal, police, or fire fighters after you have safely evacuated.
- Keep streets and walkways clear for emergency vehicles and personnel.
- Do not reenter the building until it is determined that is safe to do so as by Fire personnel or the Fire Marshal.

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Personal Belongings

The college nor the instructor is responsible for lost or stolen items. There are no lockers provided for this course. Contact Students Services at Westpointe Center for lost items: 801-957-2150. If there is a need to report a stolen item or report any other emergency, call either 911 (for emergencies only) or 801-799-3000.

Institutional Syllabus

All students are required to log into Canvas by going to <http://www.slcc.edu> and selecting Canvas from the MY SLCC dropdown menu. In the Global navigation, click the Institutional Syllabus and read all the information on all three tabs. All students will be required to know this information and maybe tested on it!

Local Welding Equipment Suppliers

The following companies sell welder's tools and supplies locally. Some will give SLCC students a