South Central College

WELD 1175 Advanced Welding Lab II

Common Course Outline

Course Information

Description In this course students will be given more lab time to incorporate what they have been learning in the other classes. Students will read a print and weld a weldment that may be used by industry. (Prerequisites: WELD 1011 - Safety OSHA 10, WELD 1126 - Advanced SMAW, WELD 1136 - Advanced GMAW, WELD 1108 - Blueprint, WELD 1146 - Advanced GTAW, WELD 1160 - Fabrication I or instructor approval)

Total Credits 4

Total Hours 128

Types of Instruction

Instruction Type	Credits/Hours
Lab	4/128

Pre/Corequisites

WELD 1011 - Safety OSHA 10, WELD 1126 - Advanced SMAW, WELD 1136 - Advanced GMAW, WELD 1108 - Blueprint, WELD 1146 - Advanced GTAW, WELD 1160 - Fabrication I or instructor approval.

Institutional Core Competencies

Communication - Students will be able to demonstrate appropriate and effective interactions with others to achieve their personal, academic, and professional objectives.

Course Competencies

1. **Demonstrate proper welding techniques for the welding process and position being welded.**

   Learning Objectives
   Demonstrate how to use correct gun/torch angle for the welding position being welded.
   Demonstrate the used of the correct electrode and shielding gas to be used for the material being welded.

2. **Demonstrate the ability to read from a blueprint and a Weld Procedure Specification (WPS) to create a weldment.**

   Learning Objectives
   Produce weldments that have the correct part dimensions and weld sizes called out on the blueprint.
   Visualize the finish weldment from looking at a blueprint.
   Demonstrate for reading a Weld Procedure Specification (WPS) to use correct voltage, amperage, shielding gas and contact tip to work distance.

3. **Demonstrate proficiency in selecting the correct program and adjustment of the welding equipment to create a sound weldment.**

Learning Objectives
Demonstrate how to access the correct program on the different welding machines.
Demonstrate how to adjust the machines for each of the processes to make a acceptable weld or weldment.
Demonstrate how to get into the programs to change waveform and frequency where applicable.

4. Demonstrate how to visually inspect welds to determine whether it is acceptable or rejectable according to the D1.1 code.

Learning Objectives
Understand the different defects that can happen depending on the weld process being used.
Demonstrate how to use fillet gauges to measure weld size to see if they are acceptable or rejectable.
Demonstrate how to visual look to see and measure to make sure that weld reinforcement is acceptable or rejectable.

5. Demonstrate how to adjust the welding machines by examining the weld profile.

Learning Objectives
Use inspection tools to inspect welds.
Inspect weld for leg-size, undercut, overlap, porosity, underfill, convexity, and general appearance.

6. Compare how different shielding gases change the penetration, bead appearance and weld spatter.

Learning Objectives
Compare what shielding gases can do to the profile of the weld. Use 100% CO2, 75/25% Ar/CO2, 92/8% AR/CO2 using the same voltage and wire speed settings .
Using the same gases as previous learning objective notice the difference of the arc and notice the different sound of the arc.

7. Examine how proper fixturing decreases warpage and misalignment of parts.

Learning Objectives
Compare two weldments that are identical, one that has been fixtured and the other that was welded freehand.
Examine how proper fixturing and alignment of pipe will reduce burn through.

8. Demonstrate how to repair a weld that is rejectable.

Learning Objectives
Demonstrate how to repair a weld using a grinder, arc carbon arc, or plasma gouging to remove the weld to be rewelded.
Demonstrate how not to leave grinding marks on the weldment so when painted it leaves no defects.

9. Demonstrate the proper Personal Protective Equipment (PPE) that should be worn when welding, grinding and cutting.

Learning Objectives
Demonstrate the proper lens shade that should be used depending on the process and amperage being used.
Demonstrate the proper Personal Protective Equipment (PPE) to be worn when using a grinder, wire wheel, and bench grinder.
Explain why it is always important to have you safety glasses on.
Explain why some manufactures wear leather steel toe boots and other have steel toe with meta-tarsel protection.

10. Demonstrate how to use other equipment in shop to cut and shear the material used for making the weldments.

Learning Objectives
Demonstrate how to turn on and adjust the shear for thickness and length of piece to be cut.
Demonstrate proper procedure for placing material in the band saw and adjusting the correct saw speed and pressure.

11. Demonstrate proficiency on qualifying tests for SMAW, FCAW, GMAW-P and GTAW-P.

Learning Objectives
Apply industry standards to testing for all positions.

Follow D1.1 or ASME code requirements for welder qualification tests.

12. Display welding knowledge and skills needed to be employable in industry.

Learning Objectives

Maintain good attendance and utilize time well in class.
Demonstrate knowledge of welding terms used in industry.
Engage in teamwork with other students in welding program.

SCC Accessibility Statement

South Central College strives to make all learning experiences as accessible as possible. If you have a disability and need accommodations for access to this class, contact the Academic Support Center to request and discuss accommodations. North Mankato: Room C-112, (507) 389-7222; Faribault: Room A-116, (507) 332-5847.

Additional information and forms can be found at: www.southcentral.edu/disability

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