South Central College

WELD 1045 Introduction to Gas Tungsten Arc Welding

Course Outcome Summary

Course Information

Description This course is designed to instruct welders in welding safety and the Gas Tungsten Arc Welding process (GTAW-TIG). The student will learn fundamentals of GTAW (TIG) for steel, stainless steel and aluminum. Welding procedures are taught on aluminum, carbon and stainless steels. The training covers edge, corner, lap, and fillet welds in all positions. Welding is limited to regular thin flat material, which does not include thick plate, pipe or other irregular shapes. (Prerequisites: None)

Total Credits 3

Total Hours 80

Types of Instruction

Instruction Type	Credits/Hours
Lecture	1 / 16
Lab	2 / 64

Pre/Corequisites

None

Institutional Core Competencies

Critical and Creative Thinking - Students will be able to demonstrate purposeful thinking with the goal of using a creative process for developing and building upon ideas and/or the goal of using a critical process for the analyzing and evaluating of ideas.

Course Competencies

1. Use basic gas tungsten arc welding terminology.

Learning Objectives
Utilize language appropriate to the field of Gas Tungsten Arc Welding (GTAW).
Select proper GTAW words to convey work details.

2. Demonstrate safety in a lab setting.

Learning Objectives
Locate eye protection, eye wash, and emergency power kill switch.
Operate tools safely.

3. Determine materials and metals necessary for GTAW.

Learning Objectives
Select proper tungsten type, tungsten size, polarity, and filler material for the base metal.
List the criteria for selecting the proper filler metals and gases.
Identify proper filler metals and gases

4. Describe general weld joint configurations.

Learning Objectives
Define basic joint configurations including lap and fillet welds.
Differentiate between types of configurations including butt, lap, tee, corner, and edge.

5. Design an effective workflow to accomplish a given GTAW task.

Learning Objectives
Identify the proper procedure for making successful gas tungsten arc welds.
List key steps in the gas tungsten arc process.
Select components utilized in welding with the gas tungsten arc process.

6. Prepare metals and materials for GTAW.

Learning Objectives
Collect appropriate materials needed for specific configurations.
Arrange materials based on requirements in given GTAW projects.
Clean and prepare the metal to be welded and assure good metal fit-up.
Apply weld-through primer if necessary and clamp as required.

7. Perform multiple practice GTAW weldments.

Learning Objectives
Practice in order to develop necessary hand eye coordination to properly apply filler metal in the weld puddle.
Demonstrate many different kinds of GTAW welds.

8. Ensure quality assurance of GTAW product.

Learning Objectives
Perform visual and destructive tests on each weld type.
Identify the causes of various welding defects; make necessary adjustments.

9. Complete welding coupon test plate projects.

Learning Objectives
Apply proper equipment settings and programs to weld on specific base metals.
Perform the proper steps in welding a multiple pass weldment.

10. Troubleshoot equipment issues that may arise during gas tungsten arc welding.

Learning Objectives
Describe potential equipment troubleshooting issues.
Determine procedure necessary to troubleshoot identified issues.
Perform minimal equipment troubleshooting.

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 B-132, (507) 389-7222; Faribault: Room A-116, (507) 332-7222.

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

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