Course Information Form (CIF)

Course Code: WLD 113

Course Title: Gas Tungsten Arc Welding

Department: Applied Sciences and Technologies
PCS Code: 1.2 - Occupational/Technical Instruction
CIP Code: 48.0508
Repeatability: 0

Effective Date: Summer 2026

Credit Hours

Catalog Notation: 1-2-2
Credit Hour Distribution:

Lecture: 1	Lab: 2	Clinical: 0	**Total: 2**

General Course Information

Catalog Description

Gas tungsten arc welding fundamentals, arc characteristics, and welding safety; skill development on 16 gauge and 0.125 steel and stainless; setups, preparation of tungsten tips, and selection of inert gases.

General Course Objectives

Students will learn to safely set up and use GTAW welding machinery, and develop manipulative skills in all-position GTAW welding of steel and stainless steel.

Minimum Placement Levels

English	Reading	Math
Placement into ENG 098	Placement into CCS 098	Placement into MAT 059

Prerequisites

Concurrent enrollment in WLD 213

Methods of Evaluation

Minimum evaluation methods include: 2-4 weekly lab assignments to evaluate skill proficiency (70% of total points); 2 written exams and 1 quiz to evaluate knowledge acquired in classroom setting (30% of total points).

Instructional Materials and Additional Supplies

Gas Tungsten ARC Welding Handbook, by Minnick.

Course Content

General Learning Outcomes (GLOs)

- Reasoning and Inquiry: Students will demonstrate the ability to solve problems using deductive reasoning and logic, quantitative reasoning, or the scientific method.
- Technology: Students will demonstrate the ability to evaluate, select, and appropriately use current and emerging tools.

Course Segments and Student Learning Outcomes

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Overview of the Course, the Course Outline, and Introduction to Gas Tungsten Arc Welding	1. List the objectives of the course. 2. Describe the methods of evaluation. 3. List the grade scale to be used for the course.	1	0	0
GTAW Skills	1. Complete puddle beads on 16 gauge steel. 2. Complete butt joint on 16 gauge steel. 3. Complete stringer beads on 16 gauge steel with fill. 4. Complete butt joint on 16 gauge steel with fill. 5. Complete lap joint on 16 gauge steel with fill. 6. Complete T-H. on 16 gauge steel with fill. 7. Complete ripple beads on 1/8 stainless steel. 8. Complete stringer beads on 1/8 stainless steel. 9. Complete butt joint on 1/8 stainless steel. 10. Complete lap joint on 1/8 stainless steel. 11. Complete T-joint on 1/8 stainless steel. 12. Complete off-position stringers.	0	29	0
Gas Tungsten Arc Welding Safety	1. Demonstrate proper safety procedures at all times. 2. Score a minimum of 100% on safety exams. 3. List the hazards created by inert gas welding. 4. Demonstrate the safety practices of inert gas welding. 5. List the personal welding equipment required to protect the welder.	2	0	0
Gas Tungsten Arc Welding Theory, Practice, and Equipment Setup	1. Describe the Tungsten Inert Gas (TIG) welding process. 2. Explain the advantages of the GTAW process over other methods of welding. 3. Name and explain the use of the equipment used for GTAW welding. 4. List the factors which affect the setup of the GTAW welding equipment. 5. Prepare the GTAW welding equipment for welding.	2	1	0
Weld Ability of Steel and Stainless Steel	1. List the characteristics of stainless steel as a usable metal. 2. List the major conditions that make stainless steel difficult to weld. 3. Discuss the welding requirements of stainless steel. 4. List the composition of steel and stainless steel alloys. 5. Identify the differences in welding steel and stainless steel with the GTAW process.	2	0	0
Gases and Electrodes Used in the GTAW Welding Process	1. Describe the types of shielding gases used relevant to the type of metal being welded, and the characteristics of each shielding gas. 2. Discuss the inert gas flow rate used for different welding conditions. 3. List the color code markings for tungsten electrodes. 4. Describe the preparation of tungsten electrodes for AC and DC welding. 5. Discuss the various types/diameters and special use of tungsten electrodes available.	2	0	0

Course Segment	Learning Outcomes	Lecture Hours	Lab Hours	Clinical Hours
Filler Rods Available in GTAW Welding	1. Select filler wires appropriate for the job. 2. List the classification codes for GTAW welding filler rods. 3. Outline the proper procedure to use when adding filler metal to a joint. 4. Explain when a fill rod should be added to a joint. 5. Use the care and storage requirements for various types of fill rods.	2	0	0
Troubleshooting Setup and Operational Problems on the GTAW Welding Equipment	1. Diagnose and fix common weld defects which occur in GTAW welding. 2. Explain the basic reasons for poor arc connections in GTAW welding, and ways to eliminate this condition. 3. Demonstrate the use of the torch nozzle and the purging action of the shielding gas. 4. Demonstrate and explain the care of the GTAW torch.	2	0	0
Characteristics and Application of Current Types	1. Identify the three welding currents available in GTAW welding. 2. Describe the hookups of each type of current, the pattern of penetration, and the arc characteristics. 3. Determine the appropriate applications of each type of current. 4. Identify the advantages and disadvantages of each current.	2	0	0

Total Contact Hours

Lecture Hours	Lab Hours	Clinical Hours
15	30	0