



Course Outline - Introduction to Gas/Arc/Mig/and Tig Welding

Course Topic: Introduction to Gas/Arc/Mig/and Tig Welding

Recommended Contact Hours: 70 hours

Course Description:

This course will introduce the safety rules for the welding lab. This course will cover the issues with dealing with ultraviolet rays, burns, fumes, and electrical hazards. This course will also introduce the print symbols and terminology used in fabricating and welding basic joints that are commonly seen on blueprints. The student will be introduced to the four basic welding processes: gas (oxyacetylene), arc (shielded metal arc welding), MIG (gas metal arc), and TIG (gas tungsten arc) welding. The student will learn proper set up and operating procedures through classroom demonstrations. Special emphasis is placed on safety principles.

Theory and operations of shielded metal arc welding equipment will also be covered. Emphasis is on safety, machine settings, and filler metals. Students will also develop a proficiency in theory and operation of shielded metal arc welding in flat welding position, and horizontal welding position.

Course Outcomes and Objectives

FGAW-1 Demonstrate safe operation in a welding shop

1. Demonstrate proper welder safety in a lab environment
2. Demonstrate proper safety practices for Shielded Metal Arc Welding
3. Demonstrate proper safety practices for Gas Metal Arc Welding
4. Demonstrate safety and use of welding lab power tools
5. Demonstrate safety and use of material cutting equipment

FGAW-2 Identify, explain and demonstrate basic welding concepts

1. Identify and explain various welding electrodes used in the Shielded Metal Arc Welding process
2. Select the proper filler metal and shielding gas for a given weldment using the Gas Metal Arc Welding process

FGAW-3 Select the proper filler metal to weld materials

1. Apply the proper welding machine settings for a given competency using the Shielded Metal Arc Welding process
2. Demonstrate proper welding technique in flat position using the Shielded Metal Arc Welding process





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3. Demonstrate proper welding technique in horizontal position using the Shielded Metal Arc Welding process
4. Prepare the Gas Metal Arc Welding machine for a given metal type and thickness
5. Demonstrate proper welding technique in flat position using the Gas Metal Arc Welding process
6. Demonstrate proper welding technique in horizontal position using the Gas Metal Arc Welding process

FGAW-4 Demonstrate how use gas-welding equipment

1. Demonstrate set-up and use of an Oxy/Fuel cutting outfit
2. Demonstrate set-up and use of of an Oxy/Fuel line cutter
3. Demonstrate set-up and use of a Plasma Arc Cutter

FGAW-5 Demonstrate cutting steel with oxy/fuel cutting equipment

1. Interpret an industrial drawing with welding symbols.
2. Demonstrate fillet and groove joint assembly.

FGAW-6 Demonstrate cutting steel with Shielded Metal Arc Welding.

Objectives:

1. Demonstrate satisfactory knowledge of proper safety practices for Shielded Metal Arc Welding
2. Apply the proper welding machine settings for a given competency using the Shielded Metal Arc Welding process
3. Demonstrate proper welding technique in vertical position using the shielded metal arc welding process
4. Demonstrate proper preparation and welding for a given weldment
5. Apply the proper welding machine settings for a given competency using the Shielded
6. Metal Arc Welding process
7. Identify and explain different welding electrodes used in the Shielded Metal Arc
8. Welding process
9. Demonstrate proper welding technique in flat position using the shielded metal arc welding process
10. Demonstrate proper welding technique in horizontal position using the shielded metal arc welding process
11. Demonstrate proper welding technique for a given weldment
12. Apply the proper welding machine settings for a given competency using the Shielded Metal Arc Welding process
13. Identify and explain various welding electrodes used in the Shielded Metal Arc Welding process





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14. Demonstrate proper welding technique in vertical position using the Shielded Metal Arc Welding process.
15. Perform welds using proper preparation and welding technique for a given weldment.
16. Demonstrate proper safety practices for Shielded Metal Arc Welding.
17. Apply the proper welding machine settings for a given competency using the Shielded Metal Arc Welding process.
18. Demonstrate proper welding technique in overhead position using the Shielded Metal Arc Welding process.
19. Perform welds using proper preparation and welding technique for a given weldment.

Course Outline:

1. Welding Code
2. Weld Measurement
3. Hand Tools
4. Weld Flaw Identification
5. Hand tool safety





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