

MFG 105 : WELDING TECHNOLOGY II

Transcript title

Welding Technology II

Credits

4

Grade mode

Standard letter grades

Contact hours total

80

Other hours

80

Prerequisites

MFG 103.

Recommended preparation

MFG 100.

Description

Second course in a three-course sequence focused on introductory level skills used in structural plate welding in accordance to AWS D1.1 Structural Steel Welding code. Introduces intermediate welding processes, safety, nomenclature, and equipment operation for the advancement of more difficult weldments in the 3F and 4F position using shielded metal arc welding (SMAW) and gas metal arc welding (GMAW) on mild steel.

Learning outcomes

1. Ability to recognize safe work practices while performing groove plate weldments in the 1G and 2G positions using angle grinders, oxy-fuel and plasma cutting processes.
2. Demonstrate appropriate set up, maintenance, and use of SMAW equipment for basic weldments.
3. Demonstrate appropriate set up, maintenance, and use of GMAW equipment for basic weldments.
4. Weld common (basic) joint assemblies with SMAW and GMAW processes to AWS D1.1 Structural Steel Welding Code.
5. Apply visual and destructive examination principles and practices in accordance with AWS D1.1.

Content outline

Function safely in the MATC Welding Lab.
Understand and practice personal safety by using proper protective gear
Understand and practice power tool safety
Understand and maintain a safe work area
Understand and apply basic SMAW Operations.
Describe and demonstrate equipment setup, shut down, and operation
Identify electrode characteristics
Demonstrate proper arc length and travel speed
Demonstrate correct starting, stopping and restarting techniques
Demonstrate proper bead placement

Understand and apply intermediate GMAW operations.
Describe and demonstrate equipment setup, shut down, and operation
Identify electrode types
Demonstrate proper stick out and travel speed
Demonstrate correct starting, stopping and restarting techniques
Demonstrate proper bead placement
SMAW: In 3F and 4F (vertical and overhead)
T Joint
Lap Joint
Surfacing
Edge Weld
GMAW: In 3F and 4F (vertical and overhead)
T Joint
Lap Joint
Surfacing
Edge Weld
Apply visual and destructive examination principles and practices in accordance with AWS D1.1.
Evaluate welds using appropriate welding inspection tools
Assess weld discontinuities causes and corrections

Required materials

This class requires the purchase of safety equipment, reference books, measurement equipment, and tools.

Grading methods

Assessment for this course may include, either on line or in person, written assignments, homework, timed tests, take home tests, oral presentations, and demonstrations of manual skills acquisition as needed to confirm achievement of the course outcomes.