Welding Core: Shielded Metal Arc Welding
Course Outcome Summary

Course Information

Description
Through classroom and/or lab/shop learning and assessment activities, students in this course will:
describe the Shielded Metal Arc Welding process (SMAW); demonstrate the safe and correct set up of
the SMAW workstation; associate SMAW electrode classifications with base metals and joint criteria;
demonstrate proper electrode selection and use based on metal types and thicknesses; build pads of
weld beads with selected electrodes in the flat position; build pads of weld beads with selected electrodes
in the horizontal position; perform basic SMAW welds on selected weld joints; and perform visual
inspection of welds.

Types of Instruction

Instruction Type       Credits
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Competencies

1. Explain the Shielded Metal Arc Welding process (SMAW).
   Properties
   Domain: Cognitive   Level: Analysis
   You will demonstrate your competence:
o through a written or oral instructor-provided evaluation tool
Your performance will be successful when:
o you differentiate between types and uses of current
o you identify the advantages and disadvantages of SMAW
o you identify types of welding power sources
o you identify different components of a SMAW station
o you describe basic electrical safety

2. Demonstrate the safe and correct set up of the SMAW workstation.
   Properties
   Domain: Cognitive   Level: Application
   You will demonstrate your competence:
o in the lab or shop setting
o using SMAW equipment
Your performance will be successful when:
o you demonstrate proper inspection of equipment
o you demonstrate proper use of PPE
o you demonstrate proper placement of workpiece connection
o you check for proper setup of equipment
o you inspect area for potential hazards/safety issues

3. Relate SMAW electrode classifications with base metals and joint criteria
   Properties
Domain: Cognitive   Level: Analysis

You will demonstrate your competence:
- through a written or oral instructor-provided evaluation tool

Your performance will be successful when:
- you explain the AWS electrode nomenclature
- you determine proper electrode for given joint based on material and position of weld
- you determine proper type of electrodes to be used in a variety of industry applications
- you identify proper electrode storage and handling

4. Demonstrate proper electrode selection and use based on metal types and thicknesses

Properties

Domain: Cognitive   Level: Application

You will demonstrate your competence:
- in the lab or shop setting
- using SMAW equipment

Your performance will be successful when:
- you select the proper electrode type and size relative to metal size, type and thickness
- you select the proper electrode type and size based on material specifications

5. Build pads of weld beads with selected electrodes in the flat position

Properties

Domain: Psychomotor   Level:

You will demonstrate your competence:
- in the lab or shop setting
- using SMAW equipment

Your performance will be successful when:
- you use the proper safety procedures and PPE
- you use the proper setup procedures
- you create a pad of beads using SMAW electrode
- your weld exhibits proper uniformity and profile

6. Build pads of weld beads with selected electrodes in the horizontal position

Properties

Domain: Psychomotor

You will demonstrate your competence:
- in the lab or shop setting

Your performance will be successful when:
- you use the proper safety procedures and PPE
- you use the proper setup procedures
- you create a pad of beads using SMAW electrode
- your weld exhibits proper uniformity and profile

7. Perform basic SMAW welds on selected weld joints.

Properties

Domain: Psychomotor

You will demonstrate your competence:
- in the lab or shop setting
- using SMAW equipment
o using appropriate tools

**Your performance will be successful when:**

- you use the proper setup procedures
- you use the proper safety procedures and PPE
- you perform a fillet weld in horizontal position
- you perform fillet weld in flat position
- you perform a groove weld in a flat position
- you perform a groove weld in a horizontal position
- you use tools appropriate for the task

8. **Perform visual inspection of welds**

**Properties**

**Domain: Psychomotor**

**You will demonstrate your competence:**

- in the lab or shop setting
- using appropriate inspection tools

**Your performance will be successful when:**

- you identify common visual discontinuities and defects on welds
- you determine causes of discontinuities and defects of welds
- you inspect welds for pass/fail ratings according to industry standards
- you use appropriate inspection tools