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Course Title: Weld Carbon Steel Workpieces Using the Shielded Metal Arc Welding Process in the Down hand Position

SAQA ID: 243063

NQF Level: 2

Credits: 15

Course Description:

This course introduces learners to the shielded metal arc welding (SMAW) process for welding carbon steel workpieces in the down hand position. It covers the basic principles of SMAW, equipment setup, electrode selection, safety protocols, and welding techniques. Through practical experience, learners will develop the skills needed to perform SMAW welds on carbon steel, adhering to industry standards and safety regulations.

Course Objectives:

By the end of this course, learners will be able to:

- Understand the principles and applications of shielded metal arc welding.
- Set up and operate SMAW equipment safely and effectively.
- Perform welds on carbon steel workpieces in the down hand position.
- Identify and rectify common welding defects in SMAW.
- Follow industry safety practices and standards in welding operations.

Benefits of Completing this Course:

- Acquire practical skills in shielded metal arc welding, essential for various industries.
- Increase employability in welding, metalworking, and construction fields.
- Improve welding quality by learning how to achieve solid, defect-free welds.
- Gain confidence in using SMAW equipment safely and effectively.
- Earn a recognized qualification that supports career growth in welding and fabrication.

Who Should Attend:

- Individuals interested in starting a career in welding or metal fabrication.
- Current welders seeking to improve their SMAW skills.
- Apprentices and trainees in welding programs.
- Supervisors and quality control personnel in welding operations.



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Assessment:

Assessment will be based on the learner's ability to:

- Demonstrate knowledge of SMAW principles and equipment setup.
- Safely operate SMAW equipment and perform welds.
- Participate in discussions and activities related to welding safety and defect correction.

Specific Outcomes and Assessment Criteria:

By successfully completing this SAQA Unit Standard, learners will demonstrate competency in the following:

1. Understand Shielded Metal Arc Welding Principles:

- Explain the basic principles of SMAW and its applications in welding carbon steel.
- Discuss the advantages of SMAW and the purpose of the down hand welding position.
- Assessment Criteria: Written assessment covering SMAW principles and applications.

2. Set Up and Operate SMAW Equipment:

- Identify SMAW equipment and electrodes used for carbon steel welding.
- Adjust welding settings based on workpiece thickness and type.
- Assessment Criteria: Practical exercise demonstrating correct setup of SMAW equipment for specific tasks.

3. Perform Down hand Welding:

- Execute welds on carbon steel workpieces in the down hand position.
- Ensure proper electrode manipulation, travel speed, and arc length to achieve high-quality welds.
- Assessment Criteria: Practical assessment focused on weld quality, including appearance, penetration, and uniformity.

4. Identify and Rectify Common Welding Defects:

- Recognize welding defects (e.g., cracks, porosity, slag inclusions) commonly associated with SMAW.
- Implement corrective measures to address identified defects and improve weld quality.
- Assessment Criteria: Written assessment on defect identification and corrective measures.



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5. Follow Safety Regulations:

- Explain and implement safety procedures related to SMAW, including PPE use and workspace safety.
- Maintain a safe working environment and apply good practices when handling SMAW equipment.
- Assessment Criteria: Group discussion and practical assessment on SMAW safety practices.

By completing this course, learners will gain the technical skills needed to weld carbon steel effectively using the SMAW process, with a focus on quality and safety in welding operations.