Industry Recognized Credential Transfer Assurance Guide: ITWLD001 Basic and Advanced Shielded Metal Arc Welding (SMAW)

July 7, 2023

Industry Recognized Credential Transfer Assurance Guides (ITAGs) are a statewide transfer initiative that guarantees the award of college-level credit to students earning agreed-upon, industry recognized credentials. Students meeting credentialing requirements, regardless of where the learning was achieved, will be eligible to earn credit for specified courses deemed equivalent to the stated industry recognized credential listed on the ITAG document. Credentials are reviewed and aligned to postsecondary learning outcomes that are endorsed by Ohio's public institutions of higher education. The receiving institution must offer an equivalent course or program. Additional information on accessing and awarding ITAG credit is outlined in this document.

Required Credential(s)

Credential Name(s): AWS D1.1 1" Plate 3G and 4G SMAW Certifications or Qualifications

Credential Issuer: American Welding Society (AWS) or other Qualification Testing Facility

Exam(s): AWS D1.1 Structural Welding Code 3G Plate Test and AWS D1.1 Structural Welding Code 4G Plate Test

Additional Requirements for Credit: Students must hold both AWS D1.1 1" Plate 3G and 4G SMAW certifications/qualifications to qualify for credit.

Credit Access and Verification

Student: Students wishing to receive credit must provide an up-to-date continuity record or wallet card to the receiving institution. The document must be obtained from an employer, Qualification Testing Facility, Accredited Test Facility, or the American Welding Society.

Institution: Students requesting credit will provide an up-to-date continuity record or wallet card. The document must be obtained from an employer, Qualification Testing Facility, Accredited Test Facility, or the American Welding Society.

Course Information

Course Name: ITWLD001 Basic and Advanced Shielded Metal Arc Welding (SMAW)

Credit Hours: 4-6

Course Description: These courses cover introductory and advanced welding concepts of design, set-up, trouble shooting, and the techniques to produce acceptable fillet and groove welds. Focus is on flat, horizontal, vertical, and overhead positions required to pass a 3G and 4G welder Certification or Qualification test using the SMAW process.

Learning Outcomes and Credential Alignment

Alignment of AWS D1.1 1" Plate 3G and 4G SMAW Exams to to Postsecondary Learning Outcomes for Basic and Advanced SMAW

Postsecondary Learning Outcomes	Credential Content
1. Set the machine controls for the transformer, rectifier, and motor generator power sources required to produce a fillet and groove weld in the vertical and overhead positions.*	Students will demonstrate proficiency and understanding on setting essential variables on a welding machine from a WPS (welding procedure specifications) in order to complete an AWS D1.1 Structural Welding Code 3G Plate Test and 4G Plate Test.
2. Produce vertical up (3F) and overhead (4F) welds to AWS standards, using E7018 electrodes, while employing proper techniques and settings.*	AWS states a 3G Plate Test and 4G Plate Test covers all electrodes and 1F, 2F, 3F, and 4F positions.
3. Produce vertical fillet (3F) welds to AWS standards, using E6010 electrodes, while employing proper techniques and settings.*	AWS states a F-4 Group (low hydrogen) 3G Plate Test and 4G Plate Test covers all electrodes and 1F, 2F, 3F, and 4F positions.
4. Produce vertical up and overhead 1" V-Groove test plates, using E7018 electrodes.*	AWS states a F-4 Group (low hydrogen) 3G Plate Test and 4G Plate Test cover unlimited plate thickness for testing.
5. Demonstrate an understanding of the difference in techniques used when welding in the vertical and overhead welding positions compared to the flat and horizontal positions.*	Welders are taught Vertical and Overhead Weld techniques. Assessment of these techniques is included in the 3G Plate Test and 4G Plate Test. Competency in flat and horizontal positions is expected when a student passes the 3G Plate Test and 4G Plate Test.
6. Demonstrate the ability to use standard measuring instruments to lay-out a component part, or assemble a weldment, based on a shop drawing or print.*	D1.1 plate tests require a specific layout as documented by the relevant prints.
7. Demonstrate an understanding of the tests used by AWS to qualify welders for making welds in the 3G and 4G positions.*	A qualified welder must understand the specifics of a plate test, the testing criteria, and the relevant weld procedures for the 3G and 4G positions.
8. Demonstrate proficiency in the SMAW process in the 3G and 4G positions by producing weld test plates in those positions. These plates must meet the applicable AWS bend test requirements as taken from the plates prepared and tested by the instructor.*	This credential/qualification covers the 3G Plate Test and 4G Plate Test standard. As per AWS D1.1, the 3G Plate Test and 4G Plate Test also cover 1G, 2G, 1F, 2F, 3F, and 4F positions.

ITAG Development Panel

Participant Name	Institution/Organization	Role
Ryan Eubank	Lakeland Community College	Lead Panel Member - Faculty
Scott Laslo	Columbus State Community College	Panel Member – Faculty
Greg Nartker	Northwest State Community College	Panel Member – Faculty
Lynne Flournoy	Cuyahoga County Community College	Panel Member – Faculty
Paul McMillan	Lakeland Community College	Panel Member – Faculty
Sue Roseum	Mentor High School	Panel Member – Career Center/OTC
Leamon Wilson	Great Oaks Career Center	Panel Member – Career Center/OTC
Charlie LaRiche	Lincoln Electric Welding School	Panel Member – Education Partner
James Koening	Ohio Technical College	Panel Member – Education Partner
Adam Webb	Ohio Technical College	Panel Member – Education Partner
Dan Sivertson	Carpenters Union	Industry
Marty Somerville	Pipefitters Union	Industry
Ed Muhlhan	Ironworkers Union	Industry
Shadrick Napier	Boilermakers Union	Industry
Pete Salamaz	Cleveland Tank	Industry
Rory Wright	NPK Industries	Industry
Marzell Brown	Rockwell Automation	Industry
Robert Speckert	Ohio Department of Higher Education	ODHE ITAG Consultant
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Dr. Ben Parrot	Ohio Department of Higher Education	Senior Associate Director, SCTAI Implementation