

# Welder Fabricator Apprenticeship

## OJL Skills / Competency Matrix

ONET / Rapids 51-4121.06 / 0622CB

Company:

Apprentice:

Mentor:

Date last updated

A. Safety and Health skills		Hours
1. Demonstrate good safety practices		8
2. Demonstrate proper techniques for lifting and carrying		8
3. Exercise extreme caution when working around electric lines and equipment		10
4. Understand Safety practice related to Cutting, Welding, Fabricating		100
5. Maintain work area properly		16
6. Practice ladder and scaffold safety and safety involved with overhead operations		8
7. Safely operate hand tools		16
8. Properly handle gas cylinders, hoses, and regulators		40
9. Wear required safety equipment / PPE		8
10. Identify types of fire extinguishers and their proper uses		4
11. Practice fire safety when operating heating equipment or working with hot materials		4
12. Demonstrate safe practices when using power tools		40
13. Demonstrate safe use of solvents		4
14. Read and interpret SDS and GHS sheets		4
15. Demonstrate awareness of confined space entry requirements		4
16. Identify hazardous materials on site (i.e. leaking gas, asbestos)		4
17. Understands and complies with OSHA guidelines and requirements		8
18. Administer first aid and CPR		6
19. Understands the principles and use of Lock-out/tag-out		8
subtotal		300
B. Basic Skills		Hours
1. Use good time management skills (i.e. efficient use of time on job site)		40
2. Follows GMP as defined by the company		40
3. Read measuring devices		60
4. Read and interpret drawings		120
5. Knowledge of basic applied computer skills and CMMS		80
6. Reads blueprints, specification and sketches and uses basic mathematics		160
7. Read and interpret applicable codes		40
8. Perform simple layout work and make templates		80
9. Use various power tools		120
10. Use of lifting equipment incl Cranes, chains, hoists, straps. Cables		40
11. Estimating weights and Center of Gravity of loads		40
12. Handling loads		120
subtotal		940
C. Welding Cutting skills		Hours
1. Theory of Cutting / Torch processes		120
2. Theory of Welding processes		120
3. Welding positions Horiz, Vertical, Overhead		240
4. Cutting processes. Saws		160
5. Cutting processes. Torches		160
6. Shielded metal arc welding		160
7. FCAW – Gas Shielded		160
8. GTAW		160
9. GMAW (Pulse)		160
10. Oxy-Fuel Cutting		160
11. Misc. Welding Processes		160
12. Fabrication and or Operates various kinds of machine such as lathes, grinders, milling machines		320
subtotal		1960
D. Layout fitting		Hours
1. layout theory and practice		240
2. working from blueprints		240
3. set up for layout		120
subtotal		600
E. Leadership Competencies		Hours
1. Project planning and scheduling		100
2. Preparing and presenting technical information		100
subtotal		200
Target for a 2 year program		4000

**(EXISTING TITLE: WELDER, COMBINATION)**  
**O\*NET-SOC CODE: 51-4121.06 RAPIDS CODE: 0622CB**  
**Related Technical Instruction**

Related instruction - This instruction shall include, but not be limited to the Lanier Technical College TCCs . Apprentices may choose two of the three TCC's below.

**Related Technical Instruction: Contact Hours: 810**

**Program Descriptions:**

GM31 Gas Metal Arc Welder: The Gas Metal Arc Welder Technical Certificate of Credit prepares students for welding careers in the MIG process. Topics include an introduction to welding technology, oxyfuel cutting techniques, and MIG welding techniques and processes.

GTA1 Gas Tungsten Arc Welder: The Gas Tungsten Arc Welder Technical Certificate of Credit provides instruction in TIG welding techniques. Topics include understanding the nature and culture of the welding industry, oxyfuel cutting techniques, and TIG welding processes.

OSM1 Advanced Shielded Metal Arc Welder: The Advanced Shielded Metal Arc Welder Technical Certificate of Credit is a continuation of the basic certificate. The advanced program provides instruction in shielded metal arc welding in the overhead, horizontal, and vertical positions.

**Course Descriptions**

**WELD 1000 - Introduction to Welding Technology:** Credit Hours 4; Contact Hours 90: This course provides an introduction to welding technology with an emphasis on basic welding laboratory principles and operating procedures. Topics include: industrial safety and health practices, hand tool and power machine use, measurement, Oxyacetylene welding, and Welding career potentials.

**WELD 1040 - Flat shielded metal arc welding:** Credit Hours 4; Contact Hours 90: This course introduces the major theory, safety practices, and techniques required for shielded metal arc welding (SMAW) in flat positions. Qualification tests, flat position, are used in the evaluation of student progress toward making industrial welds.

**WELD 1030 - Blueprint reading for Welding:** Credit Hours 4; Contact Hours 90: This course introduces the knowledge and skills necessary for reading welding and related blueprints and sketches. An emphasis is placed on identifying types of welds, and the associated abbreviations and symbols.

**WELD 1010 - Oxyfuel and Plasma Cutting:** Credit Hours 4; Contact Hours 90: Introduces fundamental principles, safety practices, equipment, and techniques necessary for metal heating, oxyfuel cutting, and plasma cutting. Topics include: metal heating and cutting techniques, manual and automatic oxyfuel cutting techniques, oxyfuel pipe cutting, plasma torch and theory, plasma machine set up and operation, and plasma cutting techniques.

**WELD 1090 - Gas Metal Arc Welding:** Credit Hours 4; Contact Hours 90: Provides knowledge of theory, safety practices, equipment and techniques required for successful gas metal arc welding. Qualification tests, all positions, are used in the evaluation of student progress toward making industrial standard welds. Topics include: GMAW safety and health practices; GMAW theory, machines, and set up; transfer modes; wire selection; shielded gas selection; and GMAW joints in all positions.

**WELD 1110 - Gas Tungsten Arc Welding:** Credit Hours 4; Contact Hours 90: Provides knowledge of theory, safety practices, inert gas, equipment, and techniques required for successful gas tungsten arc welding. Qualification tests, all positions, are used in the evaluating of student progress toward making industrial standard welds. Topics include: GTAW safety and health practices; shielding gases; metal cleaning procedures; GTAW machines and set up; selection of filler rods; GTAW weld positions; and production of GTAW beads, bead patterns, and joints.

**WELD 1050 - Horizontal Shielded Metal Arc Welding:** Credit Hours 4; Contact Hours 90: Introduces the major theory, safety practices, and techniques required for shielded metal arc welding (SMAW) in the horizontal position. Qualification tests, horizontal position, are used in the evaluation of student progress toward making industrial standard welds. Topics include: horizontal SMAW safety and health practices, selection and applications of electrodes, selection and applications for horizontal SMAW, horizontal SMAW joints, and horizontal SMAW to specification.

**WELD 1060 - Vertical Shielded Metal Arc Welding:** Credit Hours 4; Contact Hours 90:

Introduces the major theory, safety practices, and techniques required for shielded metal arc welding (SMAW) in the vertical position. Qualification tests, vertical position, are used in the evaluation of student progress toward making industrial standard welds. Topics include: vertical SMAW safety and health practices, selection and applications of electrodes for vertical SMAW, vertical SMAW joints, and vertical SMAW to specification.

**WELD 1070 - Overhead Shielded Metal Arc Welding:** Credit Hours 4; Contact Hours 90:

Introduces the major theory, safety practices, and techniques required for shielded metal arc welding (SMAW) in the overhead position. Qualification tests, overhead position, are used in the evaluation of student progress toward making industrial standard welds. Topics include: overhead SMAW safety and health practices, selection and applications of electrodes for overhead SMAW, overhead SMAW joints, and overhead SMAW to specification.