

APP101 WELDER RELATED TECHNICAL INSTRUCTION (RTI) IS 810 HOURS AND RESULTS IN 3 TECHNICAL COLLEGE CREDITS (TCC) AND IS DONE IN CONJUNCTION WITH ON-THE-JOB TRAINING (OJT) THAT IS A TOTAL OF 4000 HOURS.

RELATED TECHNICAL INSTRUCTION OUTLINE

WELDER

O*NET-SOC CODE: 51-4121.06 RAPIDS CODE: 0622CB 810 HOURS

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 introduces 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.

General Machinist Apprenticeship OJT Skills / Competency Matrix

hours

A. Safety and Health skills

1. Demonstrate good safety practices
2. Demonstrate proper techniques for lifting and carrying
3. Exercise extreme caution when working around electric lines and equipment
4. Understand Safety practice related to Cutting, Welding, Fabricating
5. Maintain work area properly
6. Practice ladder and scaffold safety and safety involved with overhead operations
7. Safely operate hand tools
8. Properly handle gas cylinders, hoses, and regulators
9. Wear required safety equipment / PPE
10. Identify types of fire extinguishers and their proper uses
11. Practice fire safety when operating heating equipment or working with hot materials
12. Demonstrate safe practices when using powers tools
13. Demonstrate safe use of solvents
14. Read and interpret SDS and GHS sheets
15. Demonstrate awareness of confined space entry requirements
16. Identify hazardous materials on site (i.e., leaking gas, asbestos)
17. Understands and complies with OSHA guidelines and requirements
18. Administer first aid and CPR
19. Understands the principles and use of Lock-out/tag-out

300

B. Basic Skills	<ol style="list-style-type: none"> 1. Use good time management skills (i.e. efficient use of time on job site) 2. Follows GMP as defined by the company 3. Read measuring devices 4. Read and interpret drawings 5. Knowledge of basic applied computer skills and CMMS 6. Reads blueprints, specification and sketches and uses basic mathematics 7. Read and interpret applicable codes 8. Perform simple layout work and make templates 9. Use various power tools 10. Use of lifting equipment incl Cranes, chains, hoists, straps. Cables 11. Estimating weights and Center of Gravity of loads 12. Handling loads 	940
C. Welding Cutting skills	<ol style="list-style-type: none"> 1. Theory of Cutting / Torch processes 2. Theory of Welding processes 3. Welding positions Horiz, Verticle, Overhead 4. Cutting processes. Saws 5. Cutting processes. Torches 6. Shielded metal arc welding 7. FCAW – Gas Shielded 8. GTAW 9. GMAW (Pulse) 10. Oxy-Fuel Cutting 11. Misc. Welding Processes 12. Fabrication and or operates various kinds of machine such as lathes, grinders, milling machines 	1960
D. Layout fitting	<ol style="list-style-type: none"> 1. layout theory and practice 2. working from blueprints 3. set up for layout 	600
E. Leadership Competencies	<ol style="list-style-type: none"> 1. Project planning and scheduling 2. Preparing and presenting technical information 	200
Target for a 2-year program		4000