Welding Technician

Program Description

Designed to prepare the graduate for employment as a welder or a welder helper in the metal trades. The major types of welding covered are shielded arc, acetylene gas welding, metal inert gas, tungsten inert gas, automatic and semi-automatic welding machines.

Certificate of Achievement and Associate in Science Degree

A Certificate of Achievement can be obtained upon completion of the 15-unit Certificate Courses. The Associate in Science Degree can be obtained by completing the 15-unit Certificate Courses, the 12-unit Associate Courses, general education requirements, and electives. All courses for this major must be completed with a minimum grade of C or a P if the course is taken on a Pass/No Pass basis. Completion of this program prepares the student to take the welders' certification AWS D1.1 exam.

Program Outcomes

Students who complete the Welding Technician Certificate of Achievement/Associate Degree will be able to:

- 1. Demonstrate competency in major welding processes used in industry.
- 2. Apply welding processes and the use of hand tools and shop equipment to fabricate projects.
- 3. Recognize and interpret technical drawings in the planning and fabrication of projects.
- 4. Demonstrate appropriate workplace safety policies and procedures during welding and fabrication operations.
- 5. Apply mathematical concepts to solve problems related to an industrial/technical environment.

CERTIFICATE COURSES	Units
DRFT 079 Blueprint Reading	3
WELD 130 Beginning Shielded Metal Arc Welding	
(Stick 7018/6010 Basic)	3
WELD 131 Intermediate Shielded Metal Arc Weldir	ıg
(Stick Welding)	3
WELD 132 Advanced SMAW (Stick Welding)	3
IT 151 Vocational Mathematics	3
Total Units	15
ADDITIONAL COURSES FOR	
ASSOCIATE DEGREE	Units
IT 101 Introduction to Mechatronics	3
OCED 070 Occupational Soft Skills	1.5
OCED 071 Occupational Portfolio Development	1.5
WELD 136 Beginning Structural Steel and Flux Cor	e
Arc Weld (FCAW)	3
WELD 145 Intermediate Pipe Welding	
7018 STK (SMAW)	
Total Units	27
Required Major Total Units	27
Solano General Education	
Electives (as needed to reach 60 units)	
Total Dagrae Units Solano GF	60

This is a Gainful Employment Program. For additional information, please visit http://www.solano.edu/gainful_employment/ and select "Welding Technician."

3.0 Units

WELD 100 Introduction to Welding

Course Advisory: SCC minimum English standard.

Hours: 32-36 lecture, 48-54 lab.

An introduction to welding processes, including shielded metal arc, gas metal arc, flux-cored gas shield and self shield, gas tungsten arc, oxyacetylene cutting and welding on joint designs, and positions used in industry. Safety in arc welding, oxyacetylene, and plasma cutting is also covered. Field trips may be required.

WELD 101 Welding Technology 10.0 Units

Prerequisite: WELD 100 or comparable industry experience or training. Course Advisory: SCC minimum English standard.

Hours: 80-90 lecture, 240-270 lab.

Presents the theory, procedures, and manipulative skills required to weld mild steel plate to code certification levels with the shielded metal arc and flux cored arc welding processes. A basic understanding of metallurgy, metals identification, layout, and welding of other metals is also presented.

WELD 102 Welding Technology

10.0 Units

10.0 Units

Prerequisite: WELD 101 or comparable industry experience or training. Course Advisory: SCC minimum English and Math standards. Hours: 80-90 lecture, 240-270 lab.

Presents the theory, procedures, and manipulative skills required to weld metals of various thicknesses with the gas metal arc welding process. Introduces the student to the theory, procedures, and manipulative skills required to weld mild steel pipe to industrial standards.

WELD 103 Welding Technology

Prerequisite: WELD 102 or comparable industry experience or training. Course Advisory: SCC minimum English standard.

Hours: 80-90 lecture, 240-270 lab.

Presents the theory, procedures and manipulative skills required to weld metals of various thicknesses with the gas tungsten arc process, as well as the theory, procedures and manipulative skills required to weld and fit pipe in all positions.

WELD 112 Carpentry Apprentice Welding 1.0 Unit

Course Advisory: SCC minimum English and Math standards. Hours: 12-13.5 lecture, 24-27 lab.

Provides introductory safety instruction and manipulative practice in the setup and use of oxy-acetylene and arc welding and cutting equipment. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned.

WELD 120 Plate Welder (Basic)

3.0 Units

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard.

Hours: 32-36 lecture, 48-54 lab.

Presents the theory, procedure and manipulative skills required to meet certification standards on one-inch plate using low hydrogen electrodes in the vertical position. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques earned.

WELD 121 Plate Code Welder (Advanced) 3.0 Units

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard.

Hours: 32-36 lecture, 48-54 lab.

Develops the principles taught in WELD 120, expanding the student's ability to weld one-inch thick certification plates in all positions with low hydrogen electrodes. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned.

WELD 122 Pipe Welding (Basic)

3.0 Units

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard.
Hours: 32-36 lecture, 48-54 lab.

Presents the theory, procedure, and manipulative skills required to meet certification standards on schedule 80 steel pipe in the horizontal fixed position. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned.

WELD 123 Pipe Welding (Advanced) 3.0 Units

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard.

Hours: 32-36 lecture, 48-54 lab.

Develops the principles taught in WELD 122, expanding the student's ability to weld pipe in all positions. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned.

WELD 124 Gas Tungsten Arc Welding (GTAW) 3.0 Units

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard.

Hours: 32-36 lecture, 48-54 lab.

Presents the theory, procedures, and manipulative skills required to weld aluminum steel and stainless steel with the Gas Tungsten Arc process. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned.

WELD 125 Gas Metal Arc Welding

3.0 Units

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. Hours: 32-36 lecture, 48-54 lab.

Presents the theory, procedures, and manipulative skills required to weld steel and aluminum with the gas metal arc process. Includes the manipulative skills required to weld with the flux cored arc process. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned.

WELD 126 Ornamental Iron Welding

3.0 Units

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard.

Hours: 32-36 lecture, 48-54 lab.

Presents the theory, procedures, and manipulative skills required to fabricate and weld ornamental iron projects. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned.

WELD 130 3.0 Units

Beginning Shielded Metal Arc Welding (Stick 7018/ 6010 Basic)

Couse Advisory: SCC minimum English and Math standards. Hours: 32-36 lecture, 48-54 lab.

Builds arc welding skills with an emphasis on flat and horizontal welding. Course activities prepare students for welding certification and advanced welding classes. Welding applications and parameters are discussed and applied throughout the class developing the student's ability to problem solve and develop welding skills.

WELD 131 3.0 Units

Intermediate Shielded Metal Arc Welding (Stick Welding)

Prerequisite: WELD 130 with a minimum grade of C.

Hours: 32-36 lecture, 48-54 lab.

Advances arc welding skills with an emphasis on vertical and overhead welding. Course activities prepare students for welding certification and employment. Welding applications and parameters are discussed and applied throughout the class developing the student's ability to problem solve, develop and enhance welding skills.

WELD 132 Advanced SMAW (Stick Welding) 3.0 Units

Prerequisite: WELD 131 with a minimum grade of C.

Hours: 32-36 lecture, 48-54 lab.

Advances arc welding skills with an emphasis on vertical and overhead welding. Course activities prepare students for welding certification and employment in the metal trades. Welding applications and parameters are discussed and applied throughout the class developing the students ability to problem solve and develop welding skills. This course is designed to enhance welding skills and employability in the field of structural iron working. This course also prepares the student for the American Welding Society plate code D1.1 unlimited thickness in all position certification.

MIG (GMAW) Welding WELD 135

3.0 Units

Course Advisory: SCC minimum English standard.

Hours: 32-36 lecture, 48-54 lab.

Builds on WELD 134 basic MIG welding. Advances the skills previously taught and moves the student forward in a career of manufacturing and facilities maintenance. This course covers 2F, 3F, and 4G positions (vertical and overhead positions); Aluminum spool guns; and 35 pound Stainless steel 304 and 308 wires.

WELD 136 3.0 Units

Beginning Structural Steel and Flux Core Arc Weld (FCAW)

Course Advisory: SCC minimum English and Math standards. Hours: 32-36 lecture, 48-54 lab.

Emphasizes developing skills on structural steel and FCAW practices. Related instruction will include ferrous metal identification and welding characteristics, Flux core welding applications and variable, dual shield inert shielding gases and mixtures, troubleshoot FCAW equipment and welds completed in the flat and horizontal positions (1G and 2G).

WELD 137 3.0 Units

Advanced Structural Steel and Flux Core Arc Weld (FCAW)

Prerequisite: WELD 136 with a minimum grade of C. Hours: 32-36 lecture, 48-54 lab.

Emphasizes developing skills on structural steel and FCAW practices. Related instruction will include ferrous metal identification and welding characteristics, FCAW welding applications and variable, dual shield inert shielding gases and mixtures, troubleshoot FCAW equipment and welds completed in the vertical and overhead position (3G 4G positions).

WELD 145

3.0 Units

WELD 500 Special Welding Problems Prerequisite: Permission of the instructor.

Hours by arrangement as required.

0.0 Units

Intermediate Pipe Welding 7018 STK (SMAW)

Prerequisite: Industry experience. Hours: 32-36 lecture, 48-54 lab.

Emphasizes API 1104 certification. Code, pipe classification and identification. Completion of the course does not guarantee certification unless welding procedure qualification tests are passed. Pipe welding is a skill that requires a great deal of hand eye coordination. Hours of practice are needed to master skills to advance and become skilled for employment.

Assists with vocational placement for advanced welding students who have sufficient background in welding fundamentals to pursue more independent studying in the area of their choice. The student works by arrangement with the instructor on an outlined program of study to achieve independent objectives. This is an Open Entry/ Open Exit course.

WELD 175 CNC Plasma (Cutting Automation) 3.0 Units

Course Advisory: SCC minimum English and Math standards. Hours: 32-36 lecture, 48-54 lab.

Educates students on automated plasma cutting skills and processes and related CNC metal working equipment.