

Welding

Welding, Industrial Technician

Program Description

Designed to upgrade the skills of persons employed as welders, providing advanced training in a variety of welding applications.

Certificate of Achievement and Associate in Science Degree

A Certificate of Achievement can be obtained upon completion of the 24-unit major listed below. The Associate in Science Degree can be obtained by completing a total of 60 units, including the major, general education requirements, and electives. All courses for this major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis. Certification of students as "Code Welders" is available at a nominal cost to the student.

Program Outcomes

Students who complete the Welding, Industrial 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.

REQUIRED COURSES Units

DRFT 079 Blueprint Reading	3
IT 140 Industrial Materials	3
18 units from List A.....	18
Total Units	24

List A: (select 18 units) Units

WELD 120 Plate Welder (Basic)	3
WELD 121 Plate Code Welder (Advanced)	3
WELD 122 Pipe Welding (Basic)	3
WELD 123 Pipe Welding (Advanced)	3
WELD 124 Gas Tungsten Arc Welding (GTAW)	3
WELD 125 Gas Metal Arc Welding	3
WELD 126 Ornamental Iron Welding	3

Recommended Electives:

OCED 070 Occupational Soft Skills
OCED 090 Occupational Work Experience
OCED 091 General Work Experience
WELD 175 Welding Fabrication

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

Welding

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 49-unit major. The Associate in Science Degree can be obtained by completing a total of 70 units, including the major and the general education requirements. All courses for this major must be completed with a grade of C or better or a P if the course is taken on a Pass/No Pass basis. Certification of students as "Code Welders" is available at a nominal cost to the student.

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.

REQUIRED COURSES	Units
WELD 100 Welding Technology	3
WELD 101 Welding Technology	10
WELD 102 Welding Technology	10
WELD 103 Welding Technology	10
DRFT 079 Blueprint Reading	3
IT 140 Industrial Materials	3
IT 150 Industrial Processes	3
Total Units	42

Recommended Electives:

IT 160 Electrical Fundamentals
OCED 070 Occupational Soft Skills
OCED 090 Occupational Work Experience
OCED 091 General Work Experience
WELD 175 Welding Fabrication

Welding Equipment Operator Job-Direct Certificate

All courses must be completed with a grade of "C" or better.

Required Courses	Units
WELD 175 Welding Fabrication	2
OCED 090 * Occupational Work Experience	1-8
Total Units	3-10

*Students will be required to complete 80 hours of cooperative supervised work experience to receive credit.

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Welding

WELD 100 3.0 Units
Introduction to Welding

Course Advisory: SCC minimum English standard. This course is 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. Two hours lecture, three hours lab.*

WELD 101 10.0 Units
Welding Technology

Prerequisite: WELD 100 or comparable industry experience or training. Course Advisory: SCC minimum English standard. Designed to present 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. *Five hours lecture, fifteen hours lab.*

WELD 102 10.0 Units
Welding Technology

Prerequisite: WELD 101 or comparable industry experience or training. Course Advisory: SCC minimum English and Math standards. Designed to present 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. *Five hours lecture, fifteen hours lab.*

WELD 103 10.0 Units
Welding Technology

Prerequisite: WELD 102 or comparable industry experience or training. Course Advisory: SCC minimum English standard. Designed to present 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. *Five hours lecture, fifteen hours lab.*

WELD 112 1.0 Units
Carpentry Apprentice Welding

Course Advisory: SCC minimum English and Math standards. Provides introductory safety instruction and manipulative practice in the setup and use of oxyacetylene and arc welding and cutting equipment. Manipulative and written tests are used to give students practice and to evaluate performance in applying techniques learned. *Twelve hours lecture, twenty-four hours lab (1-week course).*

WELD 120 3.0 Units
Plate Welder (Basic)

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. 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 learned. *Two hours lecture, three hours lab.*

WELD 121 3.0 Units
Plate Code Welder (Advanced)

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. 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. *Two hours lecture, three hours lab.*

WELD 122 3.0 Units
Pipe Welding (Basic)

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. 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. *Two hours lecture, three hours lab.*

WELD 123 3.0 Units
Pipe Welding (Advanced)

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. 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. *Two hours lecture, three hours lab.*

Welding

WELD 124 3.0 Units
Gas Tungsten Arc Welding (GTAW)

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. 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. *Two hours lecture, three hours lab.*

WELD 125 3.0 Units
Gas Metal Arc Welding

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. 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. *Two hours lecture, three hours lab.*

WELD 126 3.0 Units
Ornamental Iron Welding

Course Advisory: Successful completion of IT 110 or prior welding experience; SCC minimum English standard. 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. *Two hours lecture, three hours lab.*

WELD 130 4.0 Units
Beginning Shielded Metal Arc Welding (Stick 7018/6010 Basic)

Advisory: SCC minimum English and Math standards. This course is designed to build 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. *One hour lecture, nine hours lab.*

WELD 131 4.0 Units
Intermediate Shielded Metal Arc Welding (Stick Welding)

Prerequisite: WELD 130 with a minimum grade of C. Advisory: SCC minimum English and Math standards. This course is designed to advance 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 students ability to problem solve, develop and enhance welding skills. *One hour lecture, nine hours lab.*

WELD 132 4.0 Units
Advanced SMAW (Stick Welding)

Advisory: SCC minimum English and Math standards. This course is designed to advance 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. *One hour lecture, nine hours lab.*

WELD 136 4.0 Units
Beginning Structural Steel and Flux Core Arc Weld (FCAW)

Advisory: SCC minimum English and Math standards. This course 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). *One hour lecture, nine hours lab.*

WELD 137 4.0 Units
Advanced Structural Steel and Flux Core Arc Weld (FCAW)

Prerequisite: WELD 136 with a minimum grade of C. Advisory: SCC minimum English and Math Standards. This course 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). *One hour lecture, nine hours lab.*

Welding

WELD 145 4.0 Units

Intermediate Pipe Welding 7018 STK (SMAW)

Prerequisite: WELD 144 with a minimum grade of C or have comparable industry experience. This is an intermediate pipe welding course with an emphasis on API 1104 certification. Course instruction includes code, pipe classification and identification. Completion of the class 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. *One hour lecture, nine hours lab.*

WELD 175 2.0 Units

Welding Fabrication

Course Advisory: SCC minimum English and Math standards. Designed to increase student knowledge and tactile skills with welding processes and related metal working equipment. *Four hours lecture, sixteen hours lab (4-week course).*

WELD 500 0.0 Units

Special Welding Problems

Prerequisite: Permission of the instructor. Designed to assist 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. Hours by arrangement as required.*