

WELDING TECHNOLOGY

The **Welding Technology** program provides specialized training to prepare students for entry-level positions as a welder. All aspects of welding are covered including oxy-acetylene welding and cutting, braze welding, arc welding, gas metal arc welding (GMAW), gas tungsten arc welding (GTAW) and pipe welding.

Graduation Requirements

Certificate in Welding Technology: A cumulative GPA of 2.0 or higher. A minimum of 9 credits earned toward the certificate must be completed at SENMC.

AAS in Welding Technology: ENGL 1110G Composition I with a C- or higher; placement into college-level math and reading courses or completion of developmental courses with a C- or higher; cumulative GPA of 2.0 or higher. A minimum of 15 of the 63 credits for the associate's degree must be completed at SENMC.

- Welding Technology - Associate of Applied Science (<https://senmc-public.courseleaf.com/academic-programs/associate-degree-certificate-programs/welding-technology/welding-technology-aas/>)
- Welding Technology - Certificate (<https://senmc-public.courseleaf.com/academic-programs/associate-degree-certificate-programs/welding-technology/welding-technology-certificate/>)

WELD 100 Structural Welding I 6 Credits (6)

Development of basic skills in SMAW, OFC, and OFW in accordance with the AWS entry-level welder program. (3+6P)

View Course Outcomes

WELD 102 Welding Fundamentals 3 Credits (3)

Survey of welding and cutting processes for nonmajors. Classroom instruction and laboratory work with OFC/OFW, SMAW, GMAW, FCAW, and plasma arc cutting. (2+2P)

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WELD 105 Introduction to Welding 3 Credits (3)

Welding practices, procedures, and terminology. Welding safety, equipment types, electrode types in usage, joint design and testing procedures.

View Course Outcomes

WELD 110 Blueprint Reading (Welding) 3 Credits (3)

Interpretation of prints related to welding. Emphasis on AWS standard symbols for welding, brazing, and nondestructive examination.

Learning Outcomes

1. Identify, recognize, and differentiate between an orthographic and isometric drawing also line type's structural shapes, pipe, and fittings on a print.
2. Read, identify, and define scales sizes, tolerances, local and general notes, also read material lists and specifications.
3. Read, compile materials and data, and construct using a blueprint. Identify weld size and position from the welding symbols, and produce a rough sketch for construction.

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WELD 115 Structural Welding II 6 Credits (6)

Continuation of WELD 100. Emphasis on AWS entry and advanced level welder skills with SMAW, including all-position welding with mild and stainless-steel electrodes. Plasma arc and air-carbon arc cutting, metallurgy, heat treatment, and weld defects. (3+6P)

Prerequisite(s): WELD 100

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WELD 120 Basic Metallurgy 3 Credits (3)

Properties of ferrous and nonferrous materials. Service conditions and heat treatment of metals related to welding trade. Prerequisites: WELD 100.

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WELD 125 Introduction to Pipe Welding 3 Credits (3)

Pipe fit-up and welding techniques for pipe fitting and pipe weld joint using SMAW, GMAW, GTAW, and FCAW, 2G welding of pipe. (2+2P)

Prerequisite(s): WELD 100, WELD 130, and WELD 140

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WELD 126 Industrial Pipe Welding 3 Credits (3)

Enhancement of WELD 125. Development of more advanced pipe welding skills.

Prerequisite(s): WELD 110, WELD 130, and WELD 140

Corequisite(s): WELD 125

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WELD 130 Introduction to GMAW (MIG) 3 Credits (3)

Development of basic skills with gas metal arc welding (MIG) in accordance with AWS entry-level welder objectives. Wire electrodes, shielding/purge gases, and modes of metal transfer. (2+2P)

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WELD 140 Introduction to GTAW (TIG) 3 Credits (3)

Development for basic skills with gas tungsten arc welding (TIG) in accordance with AWS entry/advanced welder objectives. Welding mild steel, tungsten electrode preparation, filler wire selection, and equipment set-up. (2+2P)

Learning Outcomes

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WELD 150 Pipe Welding II 3 Credits (3)

Continuation of WELD 125; with fillet and groove welded joints in a horizontal fixed and 45-degree fixed positions (5-F, 5-G, 6-F, 6-G). (2+2P)

Prerequisite(s): WELD 125

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WELD 151 Industrial Pipe Welding II 3 Credits (3)

Enhancement of WELD 150. Development of more advanced pipe welding skills. Emphasis on industry driven test.

Prerequisite(s): WELD 125 and WELD 126

Corequisite(s): WELD 150

Learning Outcomes

1. Demonstrate... The use of a welding rod and Tig weld around a 6G pipe.
2. Explain... Tig and stick machine set-up around a 6G pipe.
3. Define... More advanced terminology used in the pipe welding profession.

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WELD 160 Introduction to SAW and FCAW 3 Credits (3)

Submerged arc and flux-cored arc welding. Demonstrations and practice with machine travel submerged arc welding (SAW), flux-cored arc welding (FCAW-G, FCAW-S) on mild steel plate and pipe. (2+2P)

View Course Outcomes

WELD 170 Welded Fabrication 3 Credits (3)

Development of fabrication skills including basic layout, measuring, and utilization of various welding processes including out-of-position welding. Use of common shop tools. Prerequisites: WELD 100, WELD 110, WELD 130, and OETS 104 or OETS 118. (1+4P)

Learning Outcomes

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WELD 180 GTAW II 3 Credits (3)

Continuation of WELD 140. Development of more advanced GTAW skills. Emphasis on pipe welding with mild steel, stainless steel, and aluminum. (2+2P)

Prerequisite(s): WELD 140

Learning Outcomes

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WELD 190 Welded Art 3 Credits (3)

Students explore the possibilities of welded art in the form of sculpture, jewelry, furniture and as a framework to support other art media. Offered as an elective for students who wish to create art using welding. (1+4P)

Prerequisite(s): WELD 102

Repeatable: up to 12 credits

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WELD 211 Welder Qualification 6 Credits (6)

Laboratory and classroom instruction on AWS and ASME Welder Performance Qualification Tests. All position plate and pipe techniques and tests for SMAW, GMAW, GTAW, FCAW, and SAW. Nondestructive and destructive examination methods. Basics of welding codes.

Prerequisites: OETS 104 or OETS 118; and WELD 100, WELD 110, WELD 120, WELD 130, WELD 140, WELD 160 and WELD 180. Restricted to majors. (3+6P)

Learning Outcomes

1. Demonstrate the use of carbon electrodes in all 4 positions on 3/8" and 1" plate
2. Explain the testing procedures on 3/8" and 1" plate
3. Define all testing procedures to include destructive and dye testing

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WELD 221 Cooperative Experience I 1 Credit (1)

Supervised cooperative work program. Student is employed in an approved occupation and supervised and rated by the employer and instructor. Student will meet in a weekly class. Graded S/U. Prerequisites: WELD 100. Restricted to majors. (3+6P)

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WELD 255 Special Problems in Welding Technology 6 Credits (6)

Individual studies in areas of welding technology.

Repeatable: for a maximum of 12 credits

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WELD 295 Special Topics 4 Credits (4)

Topics to be announced in the Schedule of Classes.

Repeatable: for a maximum of 12 credits

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