Welding Technology (WELD)

Courses

WELD A101 Gas and Arc Welding 4 Credits
Introduces basic principles of welding. Covers oxyacetylene welding (OAW), brazing, and silver. This course is equally divided between OAW and shielded metal arc welding (SMAW) processes.

WELD A102 Gas Welding 2 Credits
Develops basic oxy-acetylene welding, brazing, and cast iron welding skills, emphasizing hands-on class assignments.

WELD A103 Arc Welding 4 Credits
Provides training and hands-on experience for structural steel plate welding certification. Students certify on 0.375 inch plate, open root or with backing, at ASME or AWS code standards.

WELD A104 Arc Welding: Low-Hydrogen Electrodes 4 Credits
Develops skills and techniques required for low-hydrogen electrode welder certification, emphasizing hands-on experience. Students certify on 0.375 inch plate with backing, to AWS code standards.

Registration Restrictions: Arc welding experience can substitute for prerequisites.

WELD A105 Pipe Welding 4 Credits
Develops skills and techniques for pipe welding, all positions, open root, uphill and downhill using ANSI Schedule 40 steel pipe sizes of 4-6 inch.

Registration Restrictions: Current certification of plate, open root, vertically upward, or pre-test during registration.

WELD A106 Pipe Certification 4 Credits
Develops skills required for pipe welding, all positions, open root, uphill and downhill using 6 inch Schedule 80 steel pipe, and certify on 6 inch Schedule 80 uphill procedure, ANSI B31.3 code standard.

WELD A107 Basic Pipefitting 3 Credits
Provides instruction on interpreting various types of drawings that are commonly used for construction projects that require welded assemblies.

WELD A108 Wire Welding 4 Credits
Develops skills and techniques in wire-fed (MIG) welding on mild steel, stainless steel and aluminum, with and without gas shielding. Students gain hands-on experience with all wire types on the current market.

WELD A109 TIG Welding 4 Credits
Develops skills and techniques for tungsten-inert gas (TIG) welding on aluminum, zinc alloys, copper, magnesium, mild steel and stainless steel. Emphasizes hands-on welding assignments.

WELD A110 Shielded Metal Arc Welding (SMAW) 4 Credits
Introduces the welding of mild steels with covered electrodes. Includes welding safety, electric arc welding equipment, electrode identification and selection, basic joint design, and welding practice on carbon steel plate.

WELD A111 Basic Arc Welding 3 Credits
Provides instruction on basic principles of arc welding. Covers basic equipment and techniques for welding on carbon steel.

WELD A112 Shielded Metal Arc Welding (SMAW) 4 Credits
Introduces the welding of mild steels with covered electrodes. Includes welding safety, electric arc welding equipment, electrode identification and selection, basic joint design, and welding practice on carbon steel plate.

WELD A113 Welding of High Strength Steels 4 Credits
Builds on knowledge and techniques covered in WELD A112. Introduces the welding of high strength steels with covered electrodes. Includes welding safety, low alloy electrode selection, welding joint design, and alloy steel specifications.

Prerequisites: WELD A112.

WELD A114 Welding of High Strength Steels 4 Credits
Builds on knowledge and techniques covered in WELD A112. Introduces the welding of high strength steels with covered electrodes. Includes welding safety, low alloy electrode selection, welding joint design, and alloy steel specifications.

Prerequisites: WELD A112.

WELD A115 Technical Drawings for Welders 3 Credits
Provides instruction on interpreting various types of drawings that are commonly used for construction projects that require welded assemblies.

WELD A116 Gas Metal Arc Welding (GMAW) 4 Credits
Introduces gas metal arc welding (GMAW) techniques for joining a number of metals. Includes information on power supplies, wire feed equipment, shielding gases, filler metal selection, and electrical characteristics of the arc.

WELD A117 Flux Cored Arc Welding (FCAW) 4 Credits

Prerequisites: WELD A112 or WELD A161.

WELD A118 Gas Tungsten Arc Welding (GTAW) 4 Credits
Builds on knowledge and techniques covered in WELD A112. Introduces gas tungsten arc welding (GTAW) techniques for joining a number of metals. Includes information on power supplies, torches, inert gases, filler metal selection and electrical characteristics of the arc.

Prerequisites: WELD A112.

WELD A119 Shielded Metal Arc Welding (SMAW) 4 Credits
Introduces the welding of mild steels with covered electrodes. Includes welding safety, electric arc welding equipment, electrode identification and selection, basic joint design, and welding practice on carbon steel plate.

WELD A120 Welding of High Strength Steels 4 Credits
Builds on knowledge and techniques covered in WELD A112. Introduces the welding of high strength steels with covered electrodes. Includes welding safety, low alloy electrode selection, welding joint design, and alloy steel specifications.

Prerequisites: WELD A112.

WELD A121 Pipe Welding Vertical-Down SMAW 4 Credits
Builds on knowledge and techniques covered in WELD A112. Introduces vertical-down shielded metal arc welding (SMAW) techniques on carbon steel pipe using EXX 10 electrodes. Includes information on pipe material specifications, pipe fittings and assembly, welder qualification and American Petroleum Institute (API) Standard 1104 requirements.

May Be Stacked With: WELD A122

Prerequisites: WELD A112.

WELD A122 Pipe Welding Vertical-Up SMAW 4 Credits
Builds on knowledge and techniques covered in WELD A121. Introduces vertical-up shielded metal arc welding (SMAW) on carbon and alloy steel pipe using EXX 10 and EXXX18 electrodes. Includes information on high-strength alloy pipe specifications and welder evaluation/qualifications defined in ASME IX and ANSI/ASME B31.3.

May Be Stacked With: WELD A121

Prerequisites: WELD A121.

WELD A123 Pipe Welding Vertical-Down SMAW 4 Credits
Builds on knowledge and techniques covered in WELD A121. Introduces vertical-down shielded metal arc welding (SMAW) on carbon and alloy steel pipe using EXX 10 and EXXX18 electrodes. Includes information on high-strength alloy pipe specifications and welder evaluation/qualifications defined in ASME IX and ANSI/ASME B31.3.

May Be Stacked With: WELD A121

Prerequisites: WELD A121.

WELD A124 Pipe Welding Horizontal SMAW 4 Credits
Builds on knowledge and techniques covered in WELD A112. Introduces horizontal shielded metal arc welding (SMAW) techniques on carbon and alloy steel pipe using EXX 10 and EXXX18 electrodes. Includes information on high-strength alloy pipe specifications and welder evaluation/qualifications defined in ASME IX and ANSI/ASME B31.3.

May Be Stacked With: WELD A121

Prerequisites: WELD A121.

WELD A125 Pipe Welding Vertical-Up SMAW 4 Credits
Builds on knowledge and techniques covered in WELD A121. Introduces vertical-up shielded metal arc welding (SMAW) on carbon and alloy steel pipe using EXX 10 and EXXX18 electrodes. Includes information on high-strength alloy pipe specifications and welder evaluation/qualifications defined in ASME IX and ANSI/ASME B31.3.

May Be Stacked With: WELD A121

Prerequisites: WELD A121.
WELD A190 Selected Topics in Welding Technology 1-4 Credits
Presents relevant topics and techniques in the field of welding and fabrication.
**Special Note:** May be repeated for credit with change of subtitle.
**Prerequisites:** WELD A101.

WELD A207 Industrial Welding Qualification 2 Credits
Provides opportunity for experienced welding students to study, practice and demonstrate mastery of one or more specific technical welding methods leading to national industrial welding qualification. Each student will be evaluated on an individual basis derived from the student’s professional objectives.

**Registration Restrictions:** Prequalification welding test.

WELD A261 Ultrasonic Testing 4 Credits
Covers the principles of ultrasonic testing methods with compression and shear wave techniques. Examines inspection techniques in accordance with AWS D1.1, API 1104 and ASME codes. Prepares students for the level I, ASNT, SNT-TC-1A, recommended practice examination.
**Prerequisites:** MATH A105.

WELD A262 General Nondestructive Testing 3 Credits
Presents nondestructive testing methods of dye penetrant, magnetic particle, and visual testing. Includes the applications, advantages, and limitations of these NDT methods. Prepares students for the Level I and Level II American Society for Nondestructive Testing, SNT-TC-1A recommended practice examination.

WELD A263 Radiographic Testing Safety 2 Credits
Presents the safety practices and USNRC regulations for industrial radiography in nondestructive examination. Prepares for both Radioactive Materials (RAM) and the X-ray category Industrial Radiography Radiation Safety Personnel (IRRSP) examination administered by the American Society for Nondestructive Testing (ASNT).
**Prerequisites:** MATH A105.

WELD A264 Radiographic Testing 4 Credits
Presents theory and application of industrial radiography and meets ASNT initial training hour requirements for Level I and Level II radiographer. Includes operation of equipment, film exposures and development, radiographic procedure specifications, interpretation of radiographs, and a brief review of radiation safety.
**Prerequisites:** WELD A112 and WELD A263.

WELD A281 Welding Inspection and Code Review 4 Credits
Presents numerous welding inspection methods and a study of various welding codes and standards in preparation for the American Welding Society (AWS) Certified Welding Inspector (CWI) Examination.
**Prerequisites:** WELD A112 and WELD A157.

WELD A287 Welding Metallurgy Applications 5 Credits
Presents technical information in welding metallurgy. Includes laboratory practice in metallography, heat-treating, and mechanical properties testing.
**Prerequisites:** MATH A055 and WELD A112.

WELD A295 Welding & Nondestructive Testing Internship 1-3 Credits
Provides experience in selected industry settings for students nearing completion of a program in the Welding & Nondestructive Testing Technology Department at UAA.
**Special Note:** Course may be repeated for a maximum of 3 credits. Students required to provide all personal protective equipment (PPE) and related workplace supplies required by the employer for the position. No more than one credit per two-week period will be awarded.

**Registration Restrictions:** A minimum of 12 credits completed of advisor-approved Welding & Nondestructive Testing Technology courses with a minimum GPA of 2.5 or higher. Enrollment is restricted to admitted majors in the Welding & Nondestructive Testing Technology program. Instructor approval required.