

# WELDING TECHNOLOGY (WELD)

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**WELD 1100*****Welding I***

3 Credit Hours

Basic oxy-fuel, gas metal arc, shielded metal arc and gas tungsten arc welding processes. Safety procedures required to set up and shut down welding equipment for the various processes. Hands-on experience includes practice with the four welding systems using various thickness of steel. Industrial standards and American Welding Society (AWS) standards for quality are discussed. (1 lecture hour, 4 lab hours)

**WELD 1112*****Oxy-Fuel, Welding, Plasma Cutting and Brazing***

3 Credit Hours

Operation of oxy-acetylene welding & cutting equipment, and plasma cutting. Students learn to produce quality welds and braze joints in the flat, horizontal, vertical, and overhead positions. This course introduces cutting methods to profile, pipe, square, and bevel. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1100 or equivalent.

**WELD 1122*****Shielded Arc Welding (SMAW)***

3 Credit Hours

Theory and practice in the preparation and welding of steel joints in various positions using the Shielded Metal Arc Welding (SMAW) process. Safety, electrode selection, machine set-up, weld joint selection, and inspection and testing. Skill is developed in producing different groove and fillet welds in various positions. American Welding Society (AWS) testing standards are used. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1100 or equivalent.

**WELD 1132*****Gas Metal Arc Welding (GMAW) Carbon Steel Welding***

3 Credit Hours

This course uses the Gas Metal Arc Welding (GMAW) process also commonly known as Metal Inert Gas (MIG) welding. Both solid steel and cored wire welding on carbon steel joints. Setup and operation of MIG welding equipment will be covered. Students will prepare various welding joints to be welded in several positions. American Welding Society (AWS) testing standards are used. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1100 or consent of instructor.

**WELD 1134*****Gas Metal Arc Welding (GMAW) Aluminum Welding***

3 Credit Hours

This course uses the Gas Metal Arc Welding (GMAW) with aluminum wire welding on common industrial joints. Travel direction, weave motion, bead sequence, and gun angles for out-of-position welding on stainless is emphasized. Setup and operation of the GMAW welder under varying conditions is given emphasis. Course may be repeated two times for skill development. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1132 with a grade of C or better, or equivalent, or consent of instructor.

**WELD 1136*****Gas Metal Arc Welding (GMAW) Stainless Steel***

3 Credit Hours

This course specializes in Gas Metal Arc Welding (GMAW) with stainless steel wire welding on common industrial joints. Travel direction, weave motion, bead sequence, and gun angles for out-of-position welding on stainless are emphasized. Setup and operation of the GMAW welder under varying conditions are given emphasis. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1132 with a grade of C or better, or equivalent or consent of instructor.

**WELD 1138*****Gas Metal Arc Weld (GMAW) Bronze***

3 Credit Hours

This course specializes in Gas Metal Arc Welding (GMAW) with bronze wire welding on common industrial joints. Travel direction, weave motion, bead sequence, and gun angles for out-of-position welding on steel and aluminum are emphasized. Setup and operation of the GMAW welder under varying conditions are emphasized. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1132 with a grade of C or better, or equivalent or consent of instructor.

**WELD 1142*****Gas Tungsten Arc Welding (GTAW)***

3 Credit Hours

This course will cover the Gas Tungsten Arc Welding (GTAW) process also referred to Tungsten Inert Gas (TIG). Theory and practice will be covered in detail. Students will develop skills on various joints in several positions. This course will focus on carbon steel, stainless steel, and aluminum. American Welding Society testing standards are used. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1100 or consent of instructor.

**WELD 1144*****Gas Tungsten Arc Welding (GTAW) Aluminum***

3 Credit Hours

Theory and practice of Gas Tungsten Arc Welding (GTAW) in all positions on various joint configurations using aluminum filler. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1142 with a grade of B or better or equivalent or consent of instructor.

**WELD 1146*****Gas Tungsten Arc Welding (GTAW) Stainless Steel***

3 Credit Hours

Theory and practice of Gas Tungsten Arc Welding (GTAW) in all positions on various joint configurations using stainless steel filler. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1142 with a grade of B or better or equivalent or consent of instructor.

**WELD 1148*****Gas Tungsten Arc Welding (GTAW) Exotic Alloy***

3 Credit Hours

Theory and practice of Gas Tungsten Arc Welding (GTAW) in all positions on various joint configurations using exotic alloy metals. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1146 with a grade of B or better, or equivalent, or consent of instructor.

**WELD 1151*****Pipe Welding and Fabrication***

3 Credit Hours

This course will cover the technical skills required to be an entry-level pipe welder or welder helper. Shielded metal arc welding process will be used to produce quality weldments in various positions. Open-root, full-penetration welds utilizing American Welding Society (AWS) F3 and F4 welding electrodes will be used. Additionally, the course will teach welding inspection of discontinuities and corrective actions. American Welding Society testing standards are used. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1122 or consent of instructor.

**WELD 1160*****Skill Assessment***

3 Credit Hours

This capstone course is intended to evaluate the students on all common welding processes. Students will focus on challenging projects with various metals. The students will also complete various v-groove weldments. American Welding Society testing standards are used. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1100, WELD 1112, WELD 1122, WELD 1132, and WELD 1142 or equivalent or consent of instructor.

**WELD 1165*****Blueprint Reading and Fabrication***

4 Credit Hours

Prepares the welding student to interpret complex drawings as applied in the welding trade and to become familiar with welding symbols and their significance. Emphasis will be on developing the ability to transfer the two-dimensional print to the actual three-dimensional object. The student will gain experience in related fabrication mathematical calculations. (3 lecture hours, 2 lab hours)

**Prerequisite:** WELD 1100 with a grade of C or better, or equivalent, or consent of instructor.

**WELD 1172*****Robot Welding I***

3 Credit Hours

Operate a welding robot. This includes writing programs that control robot path, weld start and stop, and welding Parameters. The student will learn basic operation and maintenance required by the American Welding Society operator level one certification. Individual student learning and skill development determines whether or not the student successfully achieves certification. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1132 and ELMEC 1171, both with a grade of B or better, or consent of instructor.

**WELD 1820*****Selected Topics***

1-6 Credit Hours

Introductory exploration and analysis of selected topics with a specific theme indicated by course title listed in college class schedule. (1 to 6 lecture hours, 2 to 12 lab hours)

**WELD 1840*****Independent Study - Individualized***

1-4 Credit Hours

Exploration and analysis of topics within the discipline to meet individual student-defined course description, goals, objectives, topical outline and methods of evaluation in coordination with and approved by the instructor. (2 to 8 lab hours)

**Prerequisite:** Consent of instructor is required.

**WELD 2000*****Introduction to AWS Level 1***

2 Credit Hours

Covers occupational orientation, safety and health of welders, drawing and welding symbol interpretation, thermal cutting processes and welding inspection and training utilizing American Welding Society (AWS) Sense 1 standards. This course may be taken three times for credit for skills development. (2 lecture hours)

**Prerequisite:** Corequisite WELD 1100, or consent of instructor.

**WELD 2001*****AWS Level 1-SHIELDED Metal Arc Welding (SMAW)***

3 Credit Hours

Theory and practice in the preparation and welding of steel joints in various positions. Safety, electrode selection, inspection, and testing. Skill is developed in producing different position butt and fillet welds. American Welding Society (AWS) testing is emphasized. This course may be taken three times for credit for skills development. (1 lecture hours, 4 lab hours)

**Prerequisite:** WELD 1100 and WELD 2000, both with a grade of C or better, or equivalent or consent of instructor.

**WELD 2002*****AWS Level 1 Gas Tungsten Arc Welding (GTAW)***

3 Credit Hours

Theory and practice in the preparation and welding of steel joints in various positions. Safety, equipment selection, inspection, and testing. Skill is developed in producing different position butt and fillet welds. American Welding Society testing is emphasized. This course may be taken three times for credit for skills development. (1 lecture hours, 4 lab hours)

**Prerequisite:** WELD 1100 and WELD 2000, both with a grade of C or better, or equivalent or consent of instructor.

**WELD 2003*****AWS Level 1 Flux Core Arc Welding (FCAW)***

3 Credit Hours

Theory and practice in the preparation and welding of steel joints using Flux Core Arc Welding (FCAW) in various positions. Safety, electrode selection, inspection, and testing. Skill is developed in producing different position butt and fillet welds. American Welding Society (AWS) testing is emphasized. This course may be taken three times for credit for skills development. (1 lecture hours, 4 lab hours)

**Prerequisite:** WELD 1100 and WELD 2000, both with a grade of C or better, or equivalent or consent of instructor.

**WELD 2004*****AWS Level 1 Gas Metal Arc Welding (GMAW)***

3 Credit Hours

Theory and practice in the preparation and welding of steel joints using Gas Metal Arc Welding (GMAW) in various positions. Safety, electrode selection, inspection, and testing. Skill is developed in producing different position butt and fillet welds. American Welding Society (AWS) testing is emphasized. This course may be taken three times for credit for skills development. (1 lecture hours, 4 lab hours)

**Prerequisite:** WELD 1100 and WELD 2000, both with a grade of C or better, or equivalent or consent of instructor.

**WELD 2272*****Robot Welding II***

3 Credit Hours

Operate a welding robot. This include writing programs that control robot path, weld start and stop, and welding parameters. The student will learn complex welding operations, work cell maintenance, and record keeping as required by the American Welding Society operator level two certification. Individual student learning and skill development determines whether or not the student successfully achieves certification. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 1172 with a grade of B or better or consent of instructor.

**WELD 2273*****Robot Welding III***

3 Credit Hours

Operate a welding robot environment. This course includes writing programs, fixturing, process maintenance, and record keeping. The student will learn operations and welding maintenance required by the American Welding Society welding technician certification. Individual student learning and skill development determines whether or not a student successfully achieves certification. (1 lecture hour, 4 lab hours)

**Prerequisite:** WELD 2272 with a grade of B or better or consent of instructor.

**WELD 2860*****Internship (Career & Technical Ed)***

1-4 Credit Hours

Course requires participation in Career and Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. (5 to 20 lab hours)

**Prerequisite:** Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.

**Course types:** Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.)

**WELD 2865*****Internship Advanced (Career & Tech Ed)***

1-4 Credit Hours

Continuation of Internship (Career and Technical Education). Course requires participation in Career & Technical Education work experience with onsite supervision. Internship learning objectives are developed by student and faculty member, with approval of employer, to provide appropriate work-based learning experiences. Credit is earned by working a minimum of 75 clock hours per semester credit hour, up to a maximum of four credits. (5 to 20 lab hours)

**Prerequisite:** Consent of instructor and 2.0 cumulative grade point average; 12 semester credits earned in a related field of study; students work with Career Services staff to obtain approval of the internship by the dean from the academic discipline where the student is planning to earn credit.

**Course types:** Contemporary Life Skills (A.A., A.S., A.A.S., A.G.S.)