

WELDING CLASS DESCRIPTIONS

**NEW STUDENTS may take any of the first four classes listed below
These classes have NO Prerequisite Requirements.**

At Cerritos College, previous course enrollment is reviewed electronically for prior enrollment attempts. **All courses have repeatability limitations.** See Catalog for more information.

Weld 60 – Welding and Metal Fabrication Safety (1 Unit)

Prerequisite: None – This class may be taken by all students, no experience is necessary.

Recommendation: This class should be taken with Weld 100 if possible.

- This class is designed to familiarize students with the common and required safety practices of the welding industry.
- The following safety topics will be discussed: personal protective equipment, fire prevention, confined spaces, hazardous materials, electrical safety, safe working surfaces, fall protection, field welding, job site safety, and tailgate safety meetings.
- This class provides the safety knowledge needed to ensure a safe accident free career.
- This class is a must for people that want to advance into supervision and or management.
- Students that successfully complete this class will receive a frameable “Safety Certificate Diploma”.

Weld 100 – Welding Fundamentals (2.5 Units)

Prerequisite: None – This class may be taken by all students, no experience is necessary.

This class may be taken concurrently with Weld 60 and or Weld 120 during the same semester.

Class meets 1 day per week for 4 hours per day.

- Students will learn basic welding skills with 4 of the most popular arc welding processes.
- Processes include: Arc Welding (SMAW), MIG (GMAW), TIG (GTAW), and FCAW.
- Students will learn and use the Carbon Arc, Plasma Arc, and Oxyfuel Cutting processes.
- Students will receive technical lectures and demonstrations on industrial fabrication equipment.
- Students will weld daily projects using multiple welding processes.

Weld 120 – Beginning Arc Welding (5 Units)

Prerequisite: None. This class may be taken by all beginning students, regardless of their welding experience.

This class may be taken concurrently with Weld 60 and or Weld 100 and or Weld 130.

Class meets 2 days per week for 4 hours per day.

- This class is the first of 3 classes needed to become a certified welder. (120, 200, 210L)
- Students will learn how to weld using the following processes: (SMAW, GMAW, and FCAW).
- Students will learn how to weld utilizing various electrodes in multiple positions.
- Students will learn and use the Carbon Arc, Plasma Arc, and Oxyfuel Cutting processes.
- Students will receive technical lectures and demonstrations on industrial fabrication equipment.

Weld 130 – Gas Tungsten Arc Welding Fundamentals (5 Units)

Prerequisite: None. This class may be taken by all students, regardless of their welding experience.

This class meets 2 days per week for 4 hours per day.

- GTAW is also known as TIG: Tungsten Inert Gas Welding.
- This welding process is commonly used to weld things like: (Aluminum mountain bikes, chromoly race car frames, jet airplanes, helicopters, and rockets).
- Students will learn how to program sophisticated computerized welding equipment and weld on the following metals: (aluminum, carbon steel, chromoly, and stainless steel).
- Students will receive technical lectures on all aspects of the GTAW process including: (Types of GTAW equipment, inert gasses, tungstens, filler metals, heat treatment of metals, fabrication techniques, welding of various alloys, quality control, and inspection methods).
- Students can obtain an AWS Aluminum Welding Certification at the end of the semester.

WELD 49 – Welding Shop Math (4 Units) Prerequisite: None.

Recommendation: It is highly recommended that students complete Weld 100 or Weld 120 before taking WELD 49.

Class meets 4 hours per week.

- This class is designed to familiarize the student with the shop math typical to the industry.
- This class was also designed to prepare students to successfully pass the math competency tests required for employment with most Welding Unions, and for most City, County, & State jobs.
- Emphasis will be placed on the practical applications of measuring, measuring instruments, fractions, decimals, areas, volumes, and the metric system.
- Students will learn addition, subtraction, multiplication, and division of fractions.
- Students will work on various shop projects which involve: bill of materials, project weights, cost analysis, and the bidding & estimating of job specifications.
- This class is a must for people that want to advance into supervision and or management.

WELD 59 – Blueprint Reading for Welders (4 Units) Prerequisite: None.

Recommendation: It is highly recommended that students complete Weld 100 or Weld 120 before taking WELD 59.

Class meets 4 hours per week.

- This class is designed to familiarize the student with typical structural steel blueprints, shop drawings, and schematics used within the welding industry.
- Students will learn basic orthographic projections, the alphabet of lines, and isometrics.
- Students will learn how to sketch and interpret an isometric view into orthographic projection.
- Students will learn how to interpret structural steel materials used on a bill of material.
- Students will learn how to interpret welding symbols used on blueprints.
- Students will personally make numerous blueprints throughout the semester.
- This class is a must for people that want to advance into supervision and or management.

NOTE: The following classes have Prerequisite Requirements

Weld 200 – Intermediate Arc Welding (4 Units)

Prerequisite: Weld 120 (students must successfully complete Weld 120 before taking this class)

Class meets 2 days per week for 4 hours per day.

- This is the second class of 3 needed to become a certified welder. (The first is Weld 120)
- Emphasis is placed on welding in the vertical and overhead positions using the Shielded Metal Arc Welding (SMAW), Gas Metal Arc Welding (GMAW), and Flux Core Arc Welding (FCAW) processes.
- Students will improve their skills in the Carbon Arc, Plasma Arc, and Oxyfuel processes.
- Students will receive technical lectures on welding symbols, joint design, and welding inspection.

Weld 210L – Advanced Arc Welding (2 Units)

Prerequisite: Weld 200 (students must successfully complete Weld 200 before taking Weld 210L)

Class meets 2 days per week for 3 hours per day (6 hours of lab time only).

- This is the last of 3 classes needed to become a certified welder.
- This course prepares students to pass the AWS Structural Steel Welding Certification.
- Students can obtain certifications in both the SMAW and FCAW processes.
- Students will learn how to weld vee-grooves in the 3G and 4G positions with E7018 electrodes in preparation for AWS Structural Steel Certification with the SMAW (manual) process.
- Students will learn how to weld vee-grooves in the 3G and 4G positions with NR232 wire in preparation for AWS Structural Steel Certification with the FCAW (semi-automatic) process.

Weld 212L – SMAW Certification Laboratory (2 Units)

Prerequisite: Weld 210L (students must successfully complete Weld 210L before taking Weld 212L)

Class meets 2 days per week for 3 hours per day (6 hours of lab time only).

- This is an advanced laboratory class just like Weld 210L.
- Students will prepare for various Structural Steel Certifications including: SMAW, FCAW, GMAW.

Weld 214L – FCAW Certification Laboratory (2 Units)

Prerequisite: Weld 210L (students must successfully complete Weld 210L before taking Weld 214L)

Class meets 2 days per week for 3 hours per day (6 hours of lab time only).

- This advanced laboratory class allows students that have not obtained both the SMAW and FCAW certifications, one final opportunity to complete these important certifications.

Weld 170 – Structural Fabrication (2 Units)

Prerequisite: Weld 120 (students must successfully complete Weld 120 before taking Weld 170)

Recommendations: WELD 49 and WELD 59.

Class hours: Class meets 1 day per week for 4 hours.

- This is a course designed to develop the student welder's structural fabrication techniques on real and or simulated structural fabrication construction projects.
- Emphasis will be placed on the safe operation of industrial fabrication equipment.
- Equipment will include: hydraulic shears, iron workers, various metal cutting saws, grinders, bending and rolling fabrication equipment.
- Students will learn how to cut, miter, cope, and fabricate angle, channel, round & square tubing, and wide flange beams using both OAW & PAC as well as with other industrial fabrication equipment.
- This is a unique course only offered at Cerritos College.

Weld 172 Advanced Structural Fabrication (1 Unit)

Prerequisite: Weld 170 (students must successfully complete Weld 170 before taking Weld 172)

Recommendations: WELD 49 and WELD 59.

- This course is designed to develop layout skills on structural plate, beams, channel, and angle iron.
- Students will work from blueprints and utilize measuring tools and fabrication equipment to build projects typically found in the welding industry.
- Students will learn fabrication techniques utilizing the following equipment: hydraulic shears, iron workers, magnetic drills, various metal cutting saws, clamps, and fixtures.
- Students will learn how to use the following fabrication equipment: tube benders, pipe benders, and rolling equipment required to build fabrication projects.
- Students will develop a "teamwork" concept necessary to complete projects safely and successfully.
- This is a unique course only offered at Cerritos College.

Weld 53 – Pipe Layout (2 Units)

Prerequisite: Weld 120 (students must successfully complete Weld 120 before taking Weld 53)

Class meets 1 day per week for 4 hours.

- This course is designed to teach various techniques and methods used to layout piping and fittings used within the pipe welding industry.
- Emphasis will be placed on practical techniques of pipe layout, terminology, and joint designs.
- Students will learn proper techniques to quarter, miter, bevel, and prepare piping.
- Students will learn how to properly use industry tooling and equipment such as tri-squares, two hole pins, centering heads, contour markers, and pipe wraps.
- Students will learn how to layout and fit-up piping to various flanges, and prefabricated fittings.
- Students will receive technical lectures, safety, and operational procedures for pipe industry equipment.
- This is a unique course only offered at Cerritos College.

Weld 220 – Certification and Licensing for Welders (2 Units)

Contact welding professor Mark Tait by email at mtait@cerritos.edu for welding license information and the next available 3 day weekend seminar schedule.

Prerequisite: None. This class may and should be taken concurrently with Weld 210L.

Recommendation # 1: Students should successfully complete Weld 200 before taking Weld 220.

Recommendation # 2: Students transferring from other welding schools must be highly skilled in welding out of position groove welds and or already certified before taking Weld 220.

- This is a technical lecture only course for the advanced or already certified welding student.
- There is no hands-on welding in this class.
- Emphasis will be placed on welding symbols, joint designs, electrode identifications, processes, polarities, metal identifications, terminology, and AWS Structural Steel Code Specifications.
- This class prepares students to take the L.A. City Written Structural Steel License Exam.

Weld 52 – Pipe Welding Fundamentals (4 Units)

Prerequisite # 1: Weld 210L (Students must successfully complete Weld 210L before taking Weld 52)

Prerequisite # 2: Students must be SMAW Structural Steel Certified before taking Weld 52.

Class meets 2 days per week for 4 hours per day.

- This course is designed to develop skills and techniques required to weld on pipe with SMAW.
- Students will learn the proper joint preparation and alignment techniques for pipe joints.
- Students will learn how to use manual and motorized bevellers using PAC & OFC processes.

- Emphasis will be placed on welding open root vee-groove joints in all positions.
- Students will learn how to weld socket joints in the 1F, 2F, 4F, and 5F positions using E7018.
- Students will weld 6" schedule 40 pipe joints in all positions in preparation for testing.

Weld 54L – Advanced Pipe Welding (2 Units)

Prerequisite: Weld 52 (Students must successfully complete Weld 52 before taking Weld 54L)

Class meets 2 days per week for 3 hours per day.

- This course is designed to further develop skills for pipe certification testing.
- Students will learn how to weld 6" schedule 40 pipes in all positions.
- Students will weld socket joints in the 1F, 2F, 4F and 5F positions using E7018 electrodes.
- Students will weld pipe in the 6G position for ASME Pipe Certification Testing.

Weld 56L – Arc Welding 6” Pipe Certification Laboratory (2 Units)

Prerequisite: Weld 54L (Students must successfully complete Weld 54L before taking Weld 56L)

Class meets 2 days per week for 3 hours per day.

- This course is designed to further develop previously acquired pipe welding skills and to prepare students to pass various pipe welding certification tests.

Weld 58L – Arc Welding 2” Pipe Certification Laboratory (2 Units)

Prerequisite: Weld 54L (Students must successfully complete Weld 54L before taking Weld 58L)

Class meets 2 days per week for 3 hours per day.

- This course is designed to further develop previously acquired pipe welding skills and to prepare students to pass various pipe welding certification tests.

Weld 240L – Intermediate Gas Tungsten Arc Welding (2 Units)

Prerequisite: Weld 130 (Students must successfully complete Weld 130 before taking Weld 240L)

Class meets 2 days per week for 3 hours per day.

- This advanced laboratory only class is designed to further develop GTAW skills required to weld on aluminum, carbon steel, chromoly, and stainless steel.
- Students will learn how to weld on round & square tubing, and various thicknesses of sheet metals.
- Students will learn how to weld a variety of joint designs in multiple welding positions.
- Students can obtain an AWS Stainless Steel Certification at the end of the semester.

Weld 250L – Advanced Gas Tungsten Arc Welding (2 Units)

Prerequisite: Weld 240L (Students must successfully complete Weld 240L before taking Weld 250L)

Class meets 2 days per week for 3 hours per day.

- This advanced laboratory only class is designed to further develop GTAW skills required to weld on thin gauge aluminum, carbon steel, chromoly, and stainless steel in all positions.
- Students will learn advanced techniques utilizing welding jigs, fixtures, and motorized positioners.
- Students will prepare for entry level aerospace welding certification testing.
- Students can obtain an AWS Chromoly Certification at the end of the semester.

Weld 260L – Aerospace GTAW Certification Laboratory (2 Units)

Prerequisite: Weld 250L (Students must successfully complete Weld 250L before taking Weld 260L)

Class meets 2 days per week for 3 hours per day.

- This advanced laboratory only class is designed to further develop GTAW skills required to weld on thin gauge aluminum, carbon steel, chromoly, and stainless steel in all positions.
- This is the last chance class for students to obtain the various GTAW aerospace welding certifications.

Weld 81L - SMAW Specialty Laboratory (1 Unit)

Prerequisite: Weld 120 (Students must successfully complete Weld 120 before taking Weld 81L)

Class meets 1 day per week for 3 hours.

- This is an advanced welding course designed to further develop the students welding skills.
- Students will focus on strengthening their welding skills using SMAW, FCAW, and GMAW processes for out of position welding, structural welding, and certification testing.

Weld 82L - FCAW Specialty Laboratory (1 Unit)

Prerequisite: Weld 120 (Students must successfully complete Weld 120 before taking Weld 82L)

Class meets 1 day per week for 3 hours.

- This is an advanced welding course designed to further develop the students welding skills.
- Students will focus on strengthening their welding skills using SMAW, FCAW, and GMAW processes for out of position welding, structural welding, and certification testing.

Weld 83L - GTAW Specialty Laboratory (1 Unit)

Prerequisite: Weld 130

(Students must successfully complete Weld 130 before taking Weld 83L)

Class meets 1 day per week for 3 hours.

- This is an advanced GTAW welding laboratory only class.
- Students will only be allowed to weld on GTAW projects like: aluminum, stainless steel, and chromoly.
- Students may practice for the various hands-on GTAW welding certification tests.