# WELDING TECHNOLOGY

The Welding Technology program prepares students for employment in welding occupations and occupations where welding is required. Our program provides students with an understanding of the welding industry's requirements for employment and helps them to acquire entry-level job skills. Hands-on experience is emphasized in addition to a strong background in theory. Courses are held in well-equipped welding labs. Upon successful completion of the program, students will be able to demonstrate industry accepted welding and fabrication skills including, but not limited to: SMAW, FCAW, GMAW, GTAW, OAW and OFC in all positions with a variety of metals and alloys. Students are given opportunities to test and achieve certifications in welding that are included in the courses at no additional cost to enrolled students. The program also offers classes to prepare students to become Certified Welding Inspectors and L.A. City Certified Welders.

## Contact Information

Division: Applied Technology, Transportation, and Culinary Arts (T - 108)

Division Phone Number: (909) 384-4451

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- Flux Cored Arc Welding (FCAW) Certificate of Achievement
- Gas Metal Arc Welding (GMAW) Certificate of Achievement
- Gas Tungsten Arc Welding (GTAW) Certificate of Achivement
- Pipe Welding Certificate of Achievement
- Shielded Metal Arc Welding (SMAW) Certificate of Achievement
- Welding Inspection Technology Certificate of Achievement
- Welding Job Readiness Certificate of Completion
- Welding Technology Associate of Science Degree
- Welding Technology Certificate of Achievement

**WELD 010 2 Units**
**Introduction to Welding**
**Lecture:** 18 contact hours
**Lab:** 54 contact hours
This is an introductory course for students in any field that utilizes welding processes. Emphasis will be on Welding Safety, Thermal cutting, Gas Metal Arc Welding, and Shielded Metal Arc Welding in flat and horizontal positions.
**Associate Degree Applicable**

**WELD 012 2 Units**
**Oxy-Fuel Welding**
**Lecture:** 18 contact hours
**Lab:** 54 contact hours
This course provides entry-level training in oxy-acetylene welding, oxy-fuel cutting and oxy-fuel brazing.
**Associate Degree Applicable**

**WELD 015 3 Units**
**Gas Tungsten Arc Welding - Beginning**
**Lecture:** 18 contact hours
**Lab:** 108 contact hours
**Prerequisite:** WELD 012
This is an introductory course in the Gas Tungsten Arc Welding (GTAW) or Tungsten Inert Gas (TIG) welding process. Welding safety, equipment, and joint construction on mild steel are stressed.
**Associate Degree Applicable**

**WELD 016 4 Units**
**Gas Tungsten Arc Welding - Intermediate**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 015
This is an intermediate level course in the Gas Tungsten Arc Welding (GTAW) process that focuses on carbon steel, stainless steel, and aluminum. Welding safety, equipment, basic welding-joint design, expansion, contraction, and residual stress in welding of metals are also covered.
**Associate Degree Applicable**

**WELD 017 3 Units**
**Gas Tungsten Arc Welding - Advanced**
**Lab:** 162 contact hours
**Prerequisite:** WELD 016
This is an advanced course in GTAW that introduces basic theory and application of pipe welding. Pipe weld-joint design, pre-weld fit up, basic metallurgy, weld symbols, and related codes and standards are emphasized. This course develops gas tungsten arc welding skills on pipe in 1G, 2G, 5G, and 6G as well as welding safety, equipment, basic welding-joint design, expansion, contraction, and residual stress in welding of metals.
**Associate Degree Applicable**

**WELD 027 3 Units**
**Inspection of Welds: Destructive Testing**
**Lecture:** 36 contact hours
**Lab:** 54 contact hours
**Prerequisite:** WELD 010 or WELD 012
**Advisory:** TECALC 087 and READ 015 or eligibility for READ 100 as determined by the SBVC assessment process.
This course covers basic metallurgy and destructive tests commonly used to determine the physical properties of a weld. Destructive tests include: bend tests, nick break tests, tensile tests, hardness tests, fatigue tests, and impact tests.
**Associate Degree Applicable**

**WELD 028 3 Units**
**Inspection of Welds: Non-Destructive Examination**
**Lecture:** 36 contact hours
**Lab:** 54 contact hours
**Prerequisite:** WELD 010 or WELD 012
**Advisory:** TECALC 087 and READ 015 or eligibility for READ 100 as determined by the SBVC assessment process.
This course covers non-destructive examination techniques used to determine the soundness of welds and their fitness for service. It includes visual examination, dye penetrant testing, magnetic particle testing, and ultrasonic testing.
**Associate Degree Applicable**

**WELD 045 3 Units**
**Shielded Metal Arc Welding - Beginning**
**Lecture:** 18 contact hours
**Lab:** 108 contact hours
**Prerequisite/Corequisite:** WELD 010
This is an introductory course in the Shielded Metal Arc Welding (SMAW) process often referred to as stick welding or arc welding. Welding safety, equipment and joint construction on mild steel are stressed.
**Associate Degree Applicable**

**WELD 046 4 Units**
**Shielded Metal Arc Welding - Intermediate**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 045
This is an intermediate course in the Shielded Metal Arc Welding (SMAW) process. Vertical and overhead groove welds and the lab portion of the structural weld certification for the City of Los Angeles are stressed.
**Associate Degree Applicable**

**WELD 047 3 Units**
**Preparation for Shielded Metal Arc Welding (SMAW) Pipe**
**Lecture:** 18 contact hours
**Lab:** 108 contact hours
**Prerequisite:** WELD 046
**Advisory:** READ 015 or eligibility for READ 100 as determined by the SBVC assessment process.
This is an advanced course in the Shielded Metal Arc Welding (SMAW) process that prepares students for pipe welding. Emphasis will be on open root groove welds in all positions. Root passes will be welded with E6010 and fill/covers with E7018.
**Associate Degree Applicable**

**WELD 048 4 Units**
**Shielded Metal Arc Welding (SMAW) - Pipe**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 047
**Advisory:** TECALC 087
This is an advanced course covering Shielded Metal Arc Welding (SMAW) on pipe. American Welding Society (AWS) and American Petroleum Institute (API) standards will be covered. Focus will be on 5G and 6G welding positions.
**Associate Degree Applicable**

**WELD 055 4 Units**
**Rigging**
**Lecture:** 54 contact hours
**Lab:** 54 contact hours
The course is a comprehensive study of material handling and rigging.
**Associate Degree Applicable**

**WELD 060 4 Units**
**Fabrication and Layout - Beginning**
**Lecture:** 36 contact hours
**Lab:** 108 contact hours
**Prerequisite:** WELD 010
This course is designed to provide the training needed to read blueprints, create shop drawings, and fabricate and assemble parts.
**Associate Degree Applicable**

**WELD 061 3 Units**
**Layout Fitter II**
**Lecture:** 36 contact hours
**Lab:** 54 contact hours
**Prerequisite:** WELD 060
This course is designed to provide the intermediate to advanced welding student with the skills needed by craftsmen in the fabrication industry. Topics include properties of structural steel; fitting up; plate and pipe.
**Associate Degree Applicable**

**WELD 065 4 Units**
**Welding Inspection Visual - AWS-CWI**
**Lecture:** 72 contact hours
**Advisory:** WELD 028 and READ 015 or eligibility for READ 100 as determined by the SBVC assessment process.
This course is designed to prepare students for the Certified Welding Inspector (CWI) examination offered by the American Welding Society (AWS). Focus is placed on visual inspection, terms and definitions, welding symbols, welding processes, welding procedures, code specifications, materials and their limitations, weld testing, record keeping, report preparations, certifications, and responsibilities of a CWI.
**Associate Degree Applicable**

**WELD 066 3 Units**
**Preparation for Los Angeles City Welding Welding Certification - Structural (AWS D1.1)**
**Lecture:** 54 contact hours
**Prerequisite:** WELD 045
**Corequisite:** WELD 046
**Advisory:** READ 015 or eligibility for READ 100 as determined by the SBVC assessment process.
This course prepares students for the written Structural Steel examination offered by the City of Los Angeles Department of Building and Safety (LADBS) with a focus on the American Welding Society (AWS) D1.1 structural welding code.
**Associate Degree Applicable**

**WELD 067 2 Units**
**Structural Steel Special Inspection (ICC)**
**Lecture:** 36 contact hours
**Advisory:** WELD 060 and READ 015 or eligibility for READ 100 as determined by the SBVC assessment process.
This course is designed to prepare students for the structural steel special inspection examinations offered by the International Code Council (ICC). Topics include a review of the technical aspects on inspection and quality control in the area of structural steel, welding preparation, materials applications, plan reading, related codes, and report writing.
**Associate Degree Applicable**

**WELD 068 3 Units**
**Preparation for Los Angeles City Welder Certification - Reinforced Steel and Light Gauge Steel**
**Lecture:** 36 contact hours
**Lab:** 54 contact hours
**Prerequisite:** WELD 066
This class prepares students for the City of Los Angeles Department of Building and Safety (LADBS) Reinforced Steel and Light Gauge Steel written and performance qualification examinations with emphasis on the American Welding Society (AWS) D1.3 and AWS D1.4 Welding Codes.
**Associate Degree Applicable**

**WELD 077 3 Units**
**Introduction to Continuous Wire Welding**
**Lecture:** 18 contact hours
**Lab:** 108 contact hours
**Prerequisite:** WELD 010
This course covers techniques and methods of Gas Metal Arc Welding (GMAW) and Flux-cored Arc Welding (FCAW) in all positions and on various thicknesses of mild steel. Fulfills American Welding Society SENSE Level 1 – Entry Welder Certification Modules 5: Gas Metal Arc Welding (GMAW-S, GMAW Spray Transfer and 6: Flux Cored Arc Welding (FCAW-G/GM, FCAW-S).
**Associate Degree Applicable**

**WELD 080 3 Units**
**Gas Metal Arc Welding - Beginning**
**Lecture:** 18 contact hours
**Lab:** 108 contact hours
**Prerequisite:** WELD 010
This course introduces techniques and methods of Gas Metal Arc Welding (GMAW-S, GMAW Spray Transfer) in all positions and on various thicknesses of mild steel.
**Associate Degree Applicable**

**WELD 081 4 Units**
**Gas Metal Arc Welding - Intermediate**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 080
This is the study of intermediate techniques and methods of Gas Metal Arc Welding (GMAW) and Metal-Cored Arc Welding (MCAW) in all positions and on various thicknesses of mild steel and aluminum.
**Associate Degree Applicable**

**WELD 082 3 Units**
**Gas Metal Arc Welding - Advanced**
**Lab:** 162 contact hours
**Prerequisite:** WELD 081
This is an advanced course in Gas Metal Arc Welding (GMAW) that introduces basic theory and application of pipe welding. Pipe weld-joint design, pre-weld fit up, basic metallurgy, weld symbols, and related codes and standards are emphasized. The course develops Gas Metal Arc Welding (GMAW) skills on pipe in 1G, 2G, 5G, and 6G as well as welding safety, equipment, basic welding-joint design, expansion, contraction, and residual stress in welding of metals.
**Associate Degree Applicable**

**WELD 090 4 Units**
**Flux Cored Arc Welding - Gas Shielded**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 010
This course introduces techniques and methods of Flux Cored Arc Welding-Gas shielded (FCAW-G) in all positions and on various thicknesses of carbon steel.
**Associate Degree Applicable**

**WELD 091 4 Units**
**Flux Cored Arc Welding - Self Shielded**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 010
**Advisory:** WELD 090
This course introduces techniques and methods of Flux Cored Arc Welding-Self shielded (FCAW-S) in all positions and on various thicknesses of carbon steel.
**Associate Degree Applicable**

**WELD 092 3 Units**
**Flux Cored Arc Welding - Advanced**
**Lab:** 162 contact hours
**Prerequisite:** WELD 090 or WELD 091
This is an advanced course in Flux Cored Arc Welding (FCAW) that introduces basic theory and application of pipe welding. Pipe weld-joint design, pre-weld fit up, basic metallurgy, weld symbols, and related codes and standards are emphasized. The course develops Flux Cored Arc Welding skills on pipe in 1G, 2G, 5G, and 6G as well as welding safety, equipment, basic welding-joint design, expansion, contraction, and residual stress in welding of metals.
**Associate Degree Applicable**

**WELD 098 1-4 Units**
**Welding Work Experience**
**WRKEX:** 300 contact hours
Supervised training, in the form of on the job employment that will enhance the student's knowledge in the selected field of study. The student's major and job must match. For paid work, 75 hours = 1 unit; for volunteer work, 60 hours = 1 unit. Students may earn a total of 16 units toward graduation in Work Experience 098 courses. See department for specific guidelines.
**Associate Degree Applicable**

**WELD 099 1-3 Units**
**Independent Study in Welding Technology**
**DIR:** 18 contact hours
Students with previous course work in Welding Technology may do assigned projects involving research and analysis of selected topics. This independent study is for students who are interested in furthering their knowledge of Welding Technology. Prior to registration, a written contract must be prepared jointly by the instructor and the student. See instructor for details.
**Associate Degree Applicable**

**WELD 645 Noncredit**
**Shielded Metal Arc Welding - Beginning**
**Lecture:** 18 contact hours
**Lab:** 108 contact hours
This is a noncredit introductory course in the Shielded Metal Arc Welding (SMAW) process often referred to as stick welding or arc welding. Welding safety, equipment and joint construction on mild steel are stressed.

**WELD 646 Noncredit**
**Shielded Metal Arc Welding - Intermediate**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 645
This is an intermediate noncredit course in the Shielded Metal Arc Welding (SMAW) process. Vertical and overhead groove welds and the lab portion of the structural weld certification for the City of Los Angeles are stressed.

**WELD 660 Noncredit**
**Fabrication and Layout - Beginning**
**Lecture:** 36 contact hours
**Lab:** 108 contact hours
This noncredit course is designed to provide the training needed to read blueprints, create shop drawings, and fabricate and assemble parts.

**WELD 666 Noncredit**
**Preparation for Los Angeles City Welding Certification - Structural (AWS D1.1)**
**Lecture:** 54 contact hours
This noncredit course prepares students for the written Structural Steel examination offered by the City of Los Angeles Department of Building and Safety (LADBS) with a focus on the American Welding Society (AWS) D1.1 structural welding code.

**WELD 680 Noncredit**
**Gas Metal Arc Welding - Beginning**
**Lecture:** 18 contact hours
**Lab:** 108 contact hours
This noncredit course introduces techniques and methods of Gas Metal Arc Welding (GMAW-S, GMAW Spray Transfer) in all positions and on various thicknesses of mild steel.

**WELD 681 Noncredit**
**Gas Metal Arc Welding - Intermediate**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 680
This noncredit course is the study of intermediate techniques and methods of Gas Metal Arc Welding (GMAW) and Metal-Cored Arc Welding (MCAW) in all positions and on various thicknesses of mild steel and aluminum.

**WELD 690 Noncredit**
**Flux Cored Arc Welding - Gas Shielded**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
This noncredit course introduces techniques and methods of Flux Cored Arc Welding- Gas shielded (FCAW-G) in all positions and on various thicknesses of carbon steel.

**WELD 691 Noncredit**
**Flux Cored Arc Welding - Self Shielded**
**Lecture:** 18 contact hours
**Lab:** 162 contact hours
**Prerequisite:** WELD 690
This noncredit course introduces techniques and methods of Flux Cored Arc Welding- Self shielded (FCAW-S) in all positions and on various thicknesses of carbon steel.