

# WELDING (WELD)

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## WELD 30 Metal Sculpture

**2 Units** (Degree Applicable, CSU)

(May be taken for option of letter grade or Pass/No Pass)

Lecture: 18 Lab: 54

Welding processes used in the metal sculpting industry to create three-dimensional art forms. Covers design, pre-construction analysis, and cost estimates for projects. Includes use of equipment for oxyfuel welding, gas metal arc welding (GMAW), gas tungsten arc welding (GTAW), shielded metal arc welding (SMAW), and flux-cored arc welding (FCAW). Includes demonstrations and exercises in welding as it relates to the art industry.

## WELD 40 Introduction to Welding

**2 Units** (Degree Applicable, CSU)

Lecture: 18 Lab: 54

Fundamentals of welding processes related to the areas of fabrication, construction, machine tool, aerospace, and the transportation industries.

## WELD 50 Oxyacetylene Welding

**2 Units** (Degree Applicable)

Lecture: 18 Lab: 54

Oxyacetylene fusion welding (OAW), non-fusion welding and cutting, brazing and brazed welding (OFB), gas tungsten arc welding (GTAW), and fusion and non-fusion welding. Develops understanding of and fundamental skills in modern welding practices.

## WELD 51 Basic Electric Arc Welding

**2 Units** (Degree Applicable)

Lecture: 18 Lab: 54

Electric arc welding and cutting processes (SMAW, GTAW, GMAW, FCAW, and PAC) and their similarities and differences. Exploring each of these arc welding processes to gain more experience and skill welding with these processes and also gain an understanding of each of these different welding processes' strengths and weaknesses. Lab and shop safety.

## WELD 53A Welding Metallurgy

**3 Units** (Degree Applicable, CSU)

Lecture: 54

Designed for students seeking a career in welding and welding inspection. Covers structure of matter, chemical, physical, and mechanical properties of metals, principles of alloying, solid state diffusion, plastic deformation, and heat treatment.

## WELD 60 Print Reading and Computations for Welders

**3 Units** (Degree Applicable)

Lecture: 54

Reading prints and performing computations for welding fabrication operations. Interpreting and visualizing prints, title blocks, welding symbols, specifications, notes, and bills of materials. Computations necessary to calculate materials, costs, sizes, and fractional, decimal, and metric conversions.

## WELD 70A Beginning Arc Welding

**3 Units** (Degree Applicable)

Lecture: 18 Lab: 108

Develops manipulative skills and techniques for shielded metal arc (SMAW) and flux cored arc (FCAW) welding processes in the flat and horizontal positions using AC and DC welding currents on carbon steel.

## WELD 70B Intermediate Arc Welding

**3 Units** (Degree Applicable)

Lecture: 18 Lab: 108

**Advisory:** WELD 70A

Welding high alloy steel with both Shielded Metal Arc (SMAW) and Flux Core Arc (FCAW) welding processes in the vertical and overhead positions with an introduction to Gas Metal Arc (GMAW) and Gas Tungsten (GTAW) welding.

## WELD 70C Certification for Welders

**3 Units** (Degree Applicable)

Lecture: 18 Lab: 108

**Prerequisite:** WELD 70B

Building construction for the advanced arc welding student. Special emphasis will be placed on welding symbols and the American Welding Society's (AWS) D1.1 and D1.3.

## WELD 80 Construction Fabrication and Welding

**3 Units** (Degree Applicable)

Lecture: 18 Lab: 108

**Advisory:** WELD 40 and WELD 51 and WELD 70A

Theory and practical applications of welding used in industry and construction. Designed to adapt and upgrade skills to industry standards and develop fabrication skills to supplement and augment welding skills. Includes project models such as ornamental iron gates and fences and material storage components.

## WELD 81 Pipe and Tube Welding

**3 Units** (Degree Applicable)

Lecture: 18 Lab: 108

**Advisory:** WELD 70B or WELD 70C

Welding in all positions as applied to the pipe industry. Welding processes include shielded metal arc welding (SMAW), gas tungsten arc welding (GTAW), gas metal arc welding (GMAW), flux cored arc welding (FCAW) using a variety of materials and configurations on subcritical and critical piping and tubing.

## WELD 90A Gas Tungsten Arc Welding

**3 Units** (Degree Applicable, CSU)

(May be taken for option of letter grade or Pass/No Pass)

Lecture: 18 Lab: 108

**Prerequisite:** WELD 70A

Advanced gas tungsten arc welding (GTAW) or tungsten inert gas (TIG) of steel, aluminum, corrosion resisting steel (CRES), and exotic metals. All position welds with many surfaces and transitions.

## WELD 90B Semiautomatic Arc Welding Process

**3 Units** (Degree Applicable, CSU)

(May be taken for option of letter grade or Pass/No Pass)

Lecture: 18 Lab: 108

**Prerequisite:** WELD 70C

Semiautomatic welding processes including gas metal arc welding (GMAW), flux cored arc welding (FCAW), and submerged arc welding (SAW) with solid and tubular wires with and without gas shielding. All position welds with many varying thicknesses will be covered.

**WELD 91 Automotive Welding, Cutting and Modification**

**3 Units** (Degree Applicable)

Lecture: 18 Lab: 108

**Prerequisite:** *WELD 70B*

This course covers the welding and cutting of metals used in fabrication in the automotive industry. Gas metal arc (GMAW/MIG), gas tungsten arc (GTAW/TIG), plasma arc cutting (PAC), and oxy-fuel Cutting (OFC) and welding will be demonstrated as they are used in the automotive industry, with an emphasis placed on specific applications and situational uses of each of these processes.

**WELD 96 Work Experience in Welding**

**1-4 Units** (Degree Applicable)

(May be taken for Pass/No Pass only)

Lab: 60-300

**Prerequisite:** *WELD 70B and Compliance with work experience regulations as designated in the college catalog*

Provides actual on-the-job experience in welding at an approved work site which is related to classroom instruction. A minimum of 75 paid or 60 non-paid clock hours per semester of supervised work is required for each unit of credit.