

# WELDING TECHNOLOGY (WELD)

## **WELD 0001A. Introduction to Welding and Fabrication**

*Units: 2*

Formerly known as WELD 15

Hours: 72 (18 lecture, 54 laboratory)

Hands-on survey class that focuses on the three common welding processes of Manual Metal Arc Welding, Gas Metal Arc Welding, and Gas Tungsten Arc Welding, including correct setup and "how to" techniques. Plasma Arc Cutting and Oxyacetylene Cutting processes are also covered. This class is a survey of basic welding, cutting and fabrication used by the welding industry, metalworking artists, and interested hobbyists. Perfect for students who have never welded before. (CSU)

## **WELD 0001B. Basic Welding Fabrication**

*Units: 2*

Formerly known as WELD 70

Prerequisite: Completion of WELD 1A with grade of "C" or better

Hours: 72 (18 lecture, 54 laboratory)

Foundational fabrication course includes elements of design and fabrication methods, tool and equipment utilization, materials planning, and print reading. Designed for welding students wanting to learn the basic skills of welding shop steel fabrication. (not transferable)

## **WELD 0002A. Gas Metal Arc Welding of Mild Carbon Steel on Sheet and Plate**

*Units: 2*

Formerly known as WELD 40

Hours: 72 (18 lecture, 54 laboratory)

Designed for those interested in beginning stages of welding. Students are taught to weld on mild carbon steel sheet and plate in various welding positions and joint configurations using Gas Metal Arc Welding. Explores the various modes of metal transfer when using the Gas Metal Arc Welding process. Prepares students to work in welding shop environment. (not transferable)

## **WELD 0002B. Gas Metal Arc Welding of Stainless Steel on Sheet and Plate**

*Units: 2*

Prerequisite: Completion of WELD 2A with grade of "C" or better

Hours: 72 (18 lecture, 54 laboratory)

Covers equipment, metal preparation, and welding of stainless steels in all positions using Gas Metal Arc Welding. Instruction in equipment setup for different metals, filler selection, material identification, and welding techniques using Gas Metal Arc Welding. Students will learn to read and correctly complete welding procedures performed in industry. Helps prepare students for employment in high demand jobs. (not transferable)

## **WELD 0002C. Gas Metal Arc Welding Certifications on Sheet and Plate**

*Units: 2*

Prerequisite: Completion of WELD 2B with grade of "C" or better

Hours: 72 (18 lecture, 54 laboratory)

Practice and completion of Gas Metal Arc Welding Certifications on sheet and plate. Upon successful completion of the course, students will hold multiple industry-recognized welding certifications in Gas Metal Arc Welding on sheet and plate in 3G and 4G welding positions. Students may choose to seek employment after successful completion of this course. (not transferable)

## **WELD 0003A. Gas Tungsten Arc Welding of Mild Carbon Steel on Sheet and Plate**

*Units: 2*

Formerly known as WELD 10

Hours: 72 (18 lecture, 54 laboratory)

Designed for those interested in beginning stages of welding. Students are taught to weld on mild carbon steel sheet and plate in various welding positions and joint configurations using Gas Tungsten Arc Welding. Prepares students to work in welding shop environment. (CSU)

## **WELD 0003B. Gas Tungsten Arc Welding of Mild Carbon and Stainless Steel on Sheet and Plate**

*Units: 2*

Formerly known as WELD 50

Prerequisite: Completion of WELD 3A with grade of "C" or better

Hours: 72 (18 lecture, 72 laboratory)

Covers equipment, metal preparation, and welding of stainless steels in all positions using Gas Tungsten Arc Welding. Instruction in equipment setup for different metals, filler selection, material identification, and welding techniques using Gas Tungsten Arc Welding. Students will learn to read and correctly complete welding procedures performed in industry. Helps prepare students for employment in high demand jobs. (CSU)

## **WELD 0003C. Gas Tungsten Arc Welding Certifications on Sheet and Plate**

*Units: 2*

Prerequisite: Completion of WELD 3B with grade of "C" or better

Hours: 72 (18 lecture, 54 laboratory)

Practice and completion of Gas Tungsten Arc Welding Certifications on sheet and plate. Upon successful completion of the course, students will hold multiple industry-recognized welding certifications in Gas Tungsten Arc Welding on sheet and plate in 3G and 4G welding positions. Students may choose to seek employment after successful completion of this course. (not transferable)

## **WELD 0005A. Manual Metal Arc Welding of Mild Carbon Steel Fillet Welds**

*Units: 2*

Formerly known as WELD 20

Hours: 72 (18 lecture, 54 laboratory)

An introduction to the principles of manual metal arc welding (MMAW), setup/use of MMAW equipment, and safe use of tools and equipment. Provides instruction in welding mild carbon steel fillet weld joints in various positions. Prepares students who wish to pursue a career in structural or pipe welding outdoors at various construction sites. (C-ID WELD 101X) (not transferable)

## **WELD 0005B. Manual Metal Arc Welding of Mild Carbon Steel Groove Welds**

*Units: 2*

Formerly known as WELD 25

Prerequisite: Completion with grade of "C" or better or concurrent enrollment in WELD 5A

Hours: 72 (18 lecture, 54 laboratory)

An expansion of the principles of Manual Metal Arc Welding (MMAW). Provides instruction in welding mild carbon steel groove weld joints in various positions, with backing and open root joints. Prepares students who wish to pursue a career in structural or pipe welding outdoors at various construction sites. (not transferable)

**WELD 0005C. Manual Metal Arc Welding Certifications on Closed and Open Root Plate**

*Units: 2*

Formerly known as WELD 80

Prerequisite: Completion of WELD 5B and WELD 2A with grades of "C" or better

Advisory: Students must be competent in vertical and overhead position welding using certification welding processes of MMAW, FCAW-G and FCAW-S

Hours: 72 (18 lecture, 54 laboratory)

Designed to certify the welder within the guidelines of American Welding Society (AWS) Structural Steel Code D1.1. Focus on manipulative skill development with MMAW E-7018 in 3G and 4G, MMAW E-6010 in 3G and 4G open root. Students will earn industry recognized certifications in Manual Metal Arc Welding. (not transferable)

**WELD 0011. Welding Metallography**

*Units: 4*

Formerly known as WELD 60

Prerequisite: Completion of WELD 1A, WELD 2A, WELD 3A or WELD 5A with grade of "C" or better

Hours: 108 (54 lecture, 54 laboratory)

Exploration of the production and properties of ferrous metals used in the welding industry. The chemical and physical properties of metals, crystallization, and theoretical concepts of alloying. Laboratory experiments in metal identification, hardness and destructive testing, heat treating, sample preparation, and microphotography. (CSU)

**WELD 0015A. Manual Metal Arc Welding on Pipe Level 1**

*Units: 2*

Formerly known as WELD 30

Prerequisite: Completion of WELD 5B with grade of "C" or better

Hours: 72 (18 lecture, 54 laboratory)

Welding of pipe using accepted practices of industry with Manual Metal Arc Welding Process. Emphasis on the welding techniques used for out-of-position welding (2G, 5G, 6G, and 6GR pipe full penetration welds). (CSU)

**WELD 0028. Independent Study**

*Units: 1-3*

Designed for students interested in furthering their knowledge at an independent study level in an area where no specific curriculum offering is currently available. Independent study might include, but is not limited to, research papers, special subject area projects, and research projects. See Independent Study page in catalog. (CSU)

**WELD 0095. Internship in Welding Technology**

*Units: 0.5-4*

Designed for advanced students to work in an area related to their educational or occupational goal. Provides new on-the-job technical training under the direction of a worksite supervisor, allowing students to expand knowledge and skills in the chosen field. Mandatory orientation session and faculty approval to determine eligibility. One unit of credit is equal to 54 hours of work. Students may earn up to a total of 16 units in internship courses (any course numbered 95 and PDEV 94). (CSU-with unit limitation)

**WELD 0801A. Introduction to Welding and Fabrication**

*Units: 0*

Hours: 72 (18 lecture, 54 laboratory)

Hands-on survey class that focuses on the three common welding processes of Manual Metal Arc Welding, Gas Metal Arc Welding, and Gas Tungsten Arc Welding, including correct setup and "how to" techniques. Plasma Arc Cutting and Oxyacetylene Cutting processes are also covered. This class is a survey of basic welding, cutting, and fabrication used by the welding industry, metalworking artists, and interested hobbyists. Perfect for students who have never welded before. (noncredit)

**WELD 0802A. Gas Metal Arc Welding of Mild Carbon Steel on Sheet and Plate**

*Units: 0*

Hours: 72 (18 lecture, 54 laboratory)

Designed for those interested in beginning stages of welding. Students are taught to weld on mild carbon steel sheet and plate in various welding positions and joint configurations using Gas Metal Arc Welding. Explores the various modes of metal transfer when using the Gas Metal Arc Welding process. Prepares students to work in welding shop environment. (noncredit)

**WELD 0810. Welding Technology Industry Training 1**

*Units: 0*

Hours: 42 (6 lecture, 36 laboratory)

Covers welding processes, knowledge, and skills specific to employers' needs. Workplace safety and etiquette are included. Metal fabrication skills for specific employment needs and welding certification testing are provided as requested by employers. (noncredit)

**WELD 0811. Welding Technology Industry Training 2**

*Units: 0*

Hours: 42 (6 lecture, 36 laboratory)

Covers advanced welding processes, knowledge, and skills specific to employers' needs. Workplace safety and etiquette are included. Advanced metal fabrication skills for specific employment needs and advanced welding certification testing are provided as requested by employers. (noncredit)