

## WELDING

### Welding

Associate of Applied Science

#### PROGRAM DESCRIPTION

The second year AAS degree in welding focuses on advanced skills sets required for the pressure piping and boiler fabrication. Industry standards set forth by AWS (American Welding Society), API (American Petroleum Institute), and ASME-Section IX (American Society of Mechanical Engineers) will be covered. Basic tools and PPE for fabrication and welding are required, a list of tools are available from the welding instructors. The Welding Department seeks to maximize the ability of its students to compete in the job market by offering relevant and up to date courses in welding technology.

To achieve this goal, the department emphasizes current technology trends in both the welding shop and classroom environment. Welding courses are offered during the day and in the evening. In addition, courses are adapted to meet the diverse needs of the student, potential employers, and respond to changes and advancements in the welding industry.

The UCC Welding program is an Educational Institutional Member of the American Welding Society, and offers AWS - SENSE curriculum and certificates.

#### PROGRAM OUTCOMES

Students who successfully complete the Welding Certificate will:

1. Apply fundamentals of welding, including the basics of common joining processes, cutting and gouging, measurement, fabrication, repair, material identification, and visual acceptance criteria
2. Interpret and apply basic elements of blueprints such as line type identification, symbols, notes, 2D and 3D interpretation, dimensioning and measurement
3. Exhibit "soft skills" such as: timeframe awareness, follow-through and completion of work, positive interactions with fellow classmates, good communication, positive attitude, and good work ethics
4. Demonstrate a knowledge and understanding of safe working conditions, as well as, safety in handling materials, equipment, and personal protective equipment
5. Identify basic components of welding systems and welding processes, proper machine setup, and demonstrate troubleshooting when visual acceptance criteria of a weldment has not been met
6. Apply knowledge of Weld Procedure Specifications or WPS's as they relate to material identification, thermal and electrical properties, applications, as well as, understanding which materials will need special procedures for preheat and post heating, filler metal selection, process selection, and other essential variables involved in the fabrication of a weldment.
7. Apply knowledge of national standards and guidelines set forth by AWS, ASME, API, OSHA, and other governing organizations that will affect their work

#### CAREER CONSIDERATIONS

The Welding program prepares students for entry level jobs as pipe fitters, pipe welders, and fabricators.

#### PROGRAM COURSE REQUIREMENTS

##### Year One

MFG 108	Starrett: PMI	3
MTH 052	Intro Algebra for the Trades	4
SP 105	Listening	3
WLD 101	Processes & Applications	4
WLD 111	SMAW	4
WLD 112	SMAW – I	3
WLD 113	SMAW – II	3
WLD 114	SMAW – III	3
WLD 121	GMAW	3
WLD 122	GMAW – Pulse	3
WLD 131	Basic Metallurgy	3
WLD 140	Blueprint Reading	3
WLD 141	FCAW – GS	3
WLD 142	FCAW – S	3
WLD 150	GTAW – I	3
WR 115	Intro Expository Writing	4

##### Year Two

DRF 112	Computer Aided Drafting - I	3
WLD 123	Advanced Welding – III	3
WLD 251	GTAW - II	3
Program Option		3-credit min.
MFG 111	Machine Shop Practices – I	4
WLD 124	Advanced Welding – IV	3
WLD 252	GTAW – III	3
WLD 222	Pipe Welding & Fitting – I	3
Program Option		3-credit min.
DRF 113	Computer Aided Drafting – II	3
MFG 112	Machine Shop Practices – II	3
WLD 161	Welding Problems	4
WLD 223	Pipe Welding & Fitting – II	3
WLD 240	Blueprint Reading – II	3
Program Option		3-credit min

**Total Credits (minimum) 97**

## WELDING, continued

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#### Program Options

##### CWE:

This program option presents CWE or Cooperative Work Experience for the second year welding student. This traditional program option would allow the welding student to do on the job training with a local welding manufacturing facility. Qualified students will work at training sites that provide experience appropriate to their major. These experiences will provide the opportunity for students to gain knowledge of the various tasks performed in their career field. A student may take any number of CWE credits per term, not to exceed 13 credits per year. Prerequisite: Instructor approval and satisfactory completion of first year welding certificate program 1 credit = 33 hours of lab

##### Year Two (suggested)

FALL		
WLD 280	CWE: Welding	3
WINTER		
WLD 280	CWE: Welding	3
SPRING		
WLD 280	CWE: Welding	3

##### ALUMINUM:

This program option was designed to develop a student's knowledge and manipulative skills in the use of Aluminum and Aluminum alloys. Course work related to this program option will focus on materials and processes related to aluminum and aluminum manufacturing industries. Students interested in this program option will concentrate on the understanding of traditional, nontraditional, and advanced welding and fabrication methods for aluminum only.

##### Year Two (suggested)

FALL		
WLD 160	Aluminum Arc Welding I	3
WINTER		
WLD 261	Aluminum Arc Welding II	3
SPRING		
WLD 262	Aluminum Arc Welding III	3

##### ENGINEERING:

This program option will present an opportunity for welding students that may have the desire and skills to do more project planning and design related to the welding and manufacturing industries. Course work for to this program option will contain more Auto CAD courses in engineering such as; Structural and Civil 3D Auto CAD. This option will allow the welding students to take CAD courses in the place of some of their CWE credits.

##### Year Two (suggested)

FALL		
WLD 280	CWE: Welding	3
WINTER		
CIV 214	Computer Aided Drafting - Civil3D and Virtual Design	3
SPRING		
DRF 116	Computer Aided Drafting - Design	3

#### PROGRAM ENTRANCE REQUIREMENTS

##### Academic Entrance Requirement

Recommended:

- A construction background or prior welding experience are helpful but not a requirement.
- Students with a criminal record are strongly urged to research employability before entering the welding program. If students enter the program with a felony conviction, they should disclose this information to their welding advisor and any Cooperative Work Experience (CWE) employer.