

# WELDING TECHNOLOGY

The Welding Program at NMSU Grants is designed to provide students with the skills and knowledge necessary for a successful career in the dynamic field of welding. This program offers both certificate and associate degree options, catering to individuals with varying career goals and aspirations.

The Welding Certificate is ideal for those seeking a quick entry into the workforce, the certificate program provides a focused curriculum that covers essential welding skills. Graduates are prepared for entry-level positions in a variety of industries. For students aspiring to advance their careers or pursue leadership roles, the associate degree program offers a more comprehensive education. In addition to welding skills, students gain a solid foundation in communication, problem-solving, and critical thinking.

Graduates of our Welding Program are well-positioned for exciting career opportunities in industries such as manufacturing, construction, automotive, and aerospace. Potential career paths include welder, welding inspector, fabrication specialist, and welding supervisor.

Welding Technology - Associate of Applied Science (<https://catalogs.nmsu.edu/grants/degree-certificate-programs/welding-technology/welding-technology-associate-applied-science/>)

Welding Technology - Certificate (<https://catalogs.nmsu.edu/grants/degree-certificate-programs/welding-technology/welding-technology-certificate/>)

## WELD 100. Structural Welding I

### 6 Credits (3+6P)

Development of basic skills in SMAW, OFC, and OFW in accordance with the AWS entry-level welder program.

## WELD 102. Welding Fundamentals

### 3 Credits (2+2P)

Survey of welding and cutting processes for nonmajors. Classroom instruction and laboratory work with OFC/OFW, SMAW, GMAW, FCAW, and plasma arc cutting.

## WELD 105. Introduction to Welding

### 3 Credits (3)

Welding practices, procedures, and terminology. Welding safety, equipment types, electrode types in usage, joint design and testing procedures.

## WELD 110. Blueprint Reading (Welding)

### 3 Credits (3)

Interpretation of prints related to welding. Emphasis on AWS standard symbols for welding, brazing, and nondestructive examination.

## WELD 115. Structural Welding II

### 6 Credits (3+6P)

Continuation of WELD 100. Emphasis on AWS entry and advanced level welder skills with SMAW, including all-position welding with mild and stainless steel electrodes. Plasma arc and air-carbon arc cutting, metallurgy, heat treatment, and weld defects.

**Prerequisite:** WELD 100.

## WELD 120. Basic Metallurgy

### 3 Credits (3)

Properties of ferrous and nonferrous materials. Service conditions and heat treatment of metals related to welding trade.

**Prerequisites:** WELD 100 or consent of instructor.

## WELD 125. Introduction to Pipe Welding

### 3 Credits (2+2P)

Pipe fit-up and welding techniques for pipe fitting and pipe weld joint using SMAW, GMAW, GTAW, and FCAW, 2G welding of pipe. Restricted to: Community Colleges only.

**Prerequisite(s):** WELD 100, WELD 130, and WELD 140, or consent of instructor.

## WELD 126. Industrial Pipe Welding

### 3 Credits (3)

Enhancement of WELD 125. Development of more advanced pipe welding skills.

**Prerequisite(s):** WELD 110, WELD 130 and WELD 140.

**Corequisite(s):** WELD 125.

## WELD 130. Introduction to GMAW MIG

### 3 Credits (2+2P)

Development of basic skills with gas metal arc welding (MIG) in accordance with AWS entry-level welder objectives. Wire electrodes, shielding/purge gases, and modes of metal transfer.

## WELD 140. Introduction to GTAW TIG

### 3 Credits (2+2P)

Development for basic skills with gas tungsten arc welding (TIG) in accordance with AWS entry/advanced welder objectives. Welding mild steel, tungsten electrode preparation, filler wire selection, and equipment set-up.

## WELD 150. Pipe Welding II

### 3 Credits (2+2P)

Continuation of WELD 125; with fillet and groove welded joints in a horizontal fixed and 45-degree fixed positions (5-F, 5-G, 6-F, 6-G).

**Prerequisite:** WELD 125.

## WELD 151. Industrial Pipe Welding II

### 3 Credits (3)

Enhancement of WELD 150. Development of more advanced pipe welding skills. Emphasis on industry driven test.

**Prerequisite(s):** WELD 125 and WELD 126.

**Corequisite(s):** WELD 150.

## WELD 160. Introduction to SAW and FCAW

### 3 Credits (2+2P)

Submerged arc and flux-cored arc welding. Demonstrations and practice with machine travel submerged arc welding (SAW), flux-cored arc welding (FCAW-G, FCAW-S) on mild steel plate and pipe. Restricted to: Community Colleges only.

## WELD 170. Welded Fabrication

### 3 Credits (1+4P)

Development of fabrication skills including basic layout, measuring, and utilization of various welding processes including out-of-position welding. Use of common shop tools.

**Prerequisites:** WELD 100, WELD 110, WELD 130, and OETS 104 or OETS 118.

## WELD 180. GTAW II

### 3 Credits (2+2P)

Continuation of WELD 140. Development of more advanced GTAW skills. Emphasis on pipe welding with mild steel, stainless steel, and aluminum.

**Prerequisite:** WELD 140 or consent of instructor.

## WELD 190. Welded Art

### 3 Credits (1+4P)

Students explore the possibilities of welded art in the form of sculpture, jewelry, furniture and as a framework to support other art media. Offered as an elective for students who wish to create art using welding. May be

repeated up to 12 credits. Restricted to Community Colleges campuses only.

**Prerequisite(s):** WELD 102.

**WELD 211. Welder Qualification**

**6 Credits (3+6P)**

Laboratory and classroom instruction on AWS and ASME Welder Performance Qualification Tests. All position plate and pipe techniques and tests for SMAW, GMAW, GTAW, FCAW, and SAW. Nondestructive and destructive examination methods. Basics of welding codes. Restricted to majors.

**Prerequisites:** OETS 104 or OETS 118; and WELD 100, WELD 110, WELD 120, WELD 130, WELD 140, WELD 160 and WELD 180 or consent of instructor.

**WELD 221. Cooperative Experience I**

**1-6 Credits**

Supervised cooperative work program. Student is employed in an approved occupation and supervised and rated by the employer and instructor. Student will meet in a weekly class. Graded S/U. Restricted to majors.

**Prerequisites:** WELD 100 or WELD 101 and consent of instructor.

**WELD 255. Special Problems in Welding Technology**

**1-6 Credits**

Individual studies in areas of welding technology. May be repeated for a maximum of 12 credits.

**Prerequisite:** consent of instructor.

**WELD 295. Special Topics**

**1-4 Credits**

Topics to be announced in the Schedule of Classes. May be repeated for a maximum of 12 credits.

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