

# WELDING TECHNOLOGY

pcc.edu/programs/welding/

## CAREER AND PROGRAM DESCRIPTION

Welding is a skill used by many trades: sheet metal workers, ironworkers, boilermakers, carpenters, steamfitters, glaziers and repair and maintenance personnel in applications ranging from the home hobbyist to heavy fabrication of bridges, ships and many other projects. A variety of welding processes are used to join units of metal.

The Welding Technology Program has been developed specifically as an open entry and open exit (OEOE) program. The program is designed to fit the needs of a student (take as few or as many courses as desired), and have the following characteristics: open entry (enter at any time during the term); self-paced (learn at your own pace); flexible (select your own attendance schedule); individualized (a program can be tailor-made to fit specific needs); and, open exit (leave the program when you have met your training goals/needs).

The program provides training in S.A.W. (Submerged Arc Welding), S.M.A.W. (shielded metal arc welding,) G.T.A.W. (gas tungsten arc welding,) G.M.A.W. (gas metal arc welding,) F.C.A.W. (flux-cored arc welding,) O.A.W. (oxy-acetylene welding,) O.A.C. (oxy-acetylene cutting,) C.A.C. (carbon arc cutting,) P.A.C. (plasma arc cutting,) and basic fabrication. Lecture portions of the program include blueprint reading, welding principles, and codes and standards.

Consult a program advisor through the department to help plan a course of study that will allow you to achieve your educational goals.

## DEGREES AND CERTIFICATES OFFERED

### ASSOCIATE OF APPLIED SCIENCE DEGREE

Welding Technology

### LESS THAN ONE-YEAR CERTIFICATE: CAREER PATHWAY

- Flux Core Arc Welding Certification Preparation
- Gas Tungsten Arc Welding Certification Preparation
- Gas Tungsten Arc Welding Customized
- General Fabrication Preparation
- Maritime Shipfitter and Welder
- Maritime Welding
- Metal Fabrication Customized
- Pipe Welding Certification Preparation
- Pipe Welding Customized
- Shielded Metal Arc Welding Certification Preparation
- Shielded Metal Arc Welding Customized
- Welding Certification Preparation Customized
- Welding Technology
- Wire Welding Certification Preparation
- Wire Welding Customized
- Wire and TIG Welding

### Academic Prerequisites

- None

### Academic Requirements

- None

### Non-Academic Prerequisites

- Contact department for program advising.

### Non-Academic Requirements

- None

## WELDING TECHNOLOGY AAS DEGREE

Minimum 96 credits. Students must also meet Associate Degree Comprehensive Requirements and Associate of Applied Science Requirements. Students must complete a total of four courses of General Education. In addition to required courses in the program of study, students must satisfy MTH 58/65 competency. Students should consult with program/academic advisors for course planning.

### Welding Degree Courses

Code	Title	Credits
WLD 101	Welding Processes & Applications	4
WLD 102	Blueprint Reading	4
WLD 111	Shielded Metal Arc Welding (E7024) and Oxy-acetylene Cutting	4
WLD 112	Shielded Metal Arc Welding: Mild Steel I (E7018)	4
WLD 113	Shielded Metal Arc Welding: Mild Steel II (E7018)	4
WLD 114	Shielded Metal Arc Welding: Mild Steel III (E6011)	4
WLD 131	Gas Metal Arc Welding	4
WLD 132	Gas Metal Arc Welding-Pulse	4
WLD 141	Flux-Cored Arc Welding I (Gas Shielded)	4
WLD 142	Flux-Cored Arc Welding II (Self Shielding)	4
WLD 151	SMAW Certification Practice: Unlimited Thickness Mild Steel	4
WLD 152	Flux Cored Arc Welding (Gas Shielded) Certification Practice	4
WLD 153	Flux Cored Arc Welding (Self shielding) Cert. Practice	4
WLD 203	Structural Steel Welding Code & Standards	4
WLD 221	Gas Tungsten Arc Welding Mild Steel	4
WLD 222	Gas Tungsten Arc Welding: Aluminum	4
WLD 223	Gas Tungsten Arc Welding: Stainless Steel	4
WLD 260	Beginning Fabrication	4
WLD 263	Welding Technology - Capstone	4
Welding Program Electives		8
General Education: 4 courses		
<b>Total Credits</b>		<b>96</b>

### WELDING PROGRAM ELECTIVES

Code	Title	Credits
BA 101	Introduction to Business (BA101=BA101Z) <sup>2</sup>	4
BA 131	Introduction to Business Technology	4
BA 206	Management Fundamentals	3
CADD 126	Introduction to AutoCAD	3
CADD 160	Drafting Fundamentals	4
CG 100	College Survival and Success	3
CG 101	College Survival and Success: Personal Responsibility	1
CG 111A	Study Skills for College Learning	3
CG 114	Financial Survival for College Students	1
CG 140A	Career and Life Planning	3
CG 209	Job Finding Skills	1-2
MCH 100	Machine Tool Basics	1
MCH 245	Metallurgy	2.5

WLD 115	Shielded Metal Arc Welding: Mild Steel IV (E6011)	4	WLD 261	Basic Fabrication	4
WLD 116A	Beginning Shielded Metal Arc Welding	3	WLD 262	Intermediate Fabrication	4
WLD 116B	Basic Welding Practice	3	WLD 266A	Intermediate Weld Practice Metal Sculpting	3
WLD 126A	Beginning Gas Tungsten Arc Welding (Heliarc)	3	WLD 266B	Advanced Weld Practice Metal Sculpting	3
WLD 126B	Basic Gas Tungsten Arc Welding (Heliarc)	3	WLD 271	Oxy-acetylene Welding Projects	4
WLD 136A	Beginning Wire Welding	3	WLD 276A	Intermediate Fabrication Welding Practice	3
WLD 136B	Basic Wire Welding	3	WLD 276B	Advanced Fabrication Welding Practice	3
WLD 146A	Beginning Pipe Welding Practice	3	WLD 280A	Cooperative Education: Welding	4
WLD 146B	Basic Pipe Welding Practice	3	WLD 280B	Cooperative Education: Welding - Seminar	1
WLD 156A	Beginning Oxy-Acetylene Welding Practice	3	WLD 286A	Intermediate Certification Welding Practice	3
WLD 156B	Basic Oxy-Acetylene Welding Practice	3	WLD 286B	Advanced Certification Welding Practice	3
WLD 166A	Beginning Weld Practice Metal Sculpting	3	WLD 290	Submerged Arc Welding	2
WLD 166B	Basic Weld Practice Metal Sculpting	3	WR 227	Technical Writing (WR227=WR227Z) <sup>Z</sup>	4
WLD 176A	Beginning Fabrication Welding Practice	3			
WLD 176B	Basic Fabrication Welding Practice	3	Z		
WLD 186A	Beginning Certification Welding Practice	3	This course is part of Oregon Common Course Numbering. The following courses are equivalent:		
WLD 186B	Basic Certification Welding Practice	3	BA 101 and BA 101Z		
WLD 190A	Beginning Welding Practice	1	WR 227 and WR 227Z are equivalent.		
WLD 190B	Basic Welding Practice	2			
WLD 190C	Intermediate Welding Practice	3	<b>TWO-YEAR CERTIFICATE</b>		
WLD 190	Maritime Welding Basics	4	Maritime Welding (p. 2)		
WLD 191	Maritime Flux Cored Arc Welding I	4	<b>LESS THAN ONE-YEAR CERTIFICATE: CAREER PATHWAY</b>		
WLD 192	Maritime Flux Cored Arc Welding II	4	Flux Core Arc Welding Certification Preparation (p. 3)		
WLD 193	Maritime Fabrication I	4	Gas Tungsten Arc Welding Certification Preparation (p. 3)		
WLD 194	Maritime Fabrication II	4	Gas Tungsten Arc Welding Customized (p. 3)		
WLD 195	Maritime Welding Certification Practice	4	General Fabrication Preparation (p. 3)		
WLD 216	Miscellaneous Electrodes & Advanced Positions	4	Maritime Aluminum Welding and Ship Fitting		
WLD 216A	Intermediate Welding Practice	3	Maritime Pipe Fitting		
WLD 216B	Advanced Metal Arc Welding	3	Maritime Pipe Welding		
WLD 224	Gas Tungsten Arc Welding: (Mild Steel) Pipe I	4	Maritime Shipfitter and Welder (p. 4)		
WLD 225	Gas Tungsten Arc Welding: (Mild Steel) Pipe II	4	Maritime Welding (p. 2)		
WLD 226A	Intermediate Gas Tungsten Arc Welding (Heliarc)	3	Metal Fabrication Customized (p. 4)		
WLD 226B	Advanced Gas Tungsten Arc Welding (Heliarc)	3	Pipe Welding Certification Preparation (p. 4)		
WLD 236A	Intermediate Wire Welding	3	Pipe Welding Customized (p. 4)		
WLD 236B	Advanced Wire Welding	3	Shielded Metal Arc Welding Certification Preparation (p. 4)		
WLD 246A	Intermediate Pipe Welding Practice	3	Shielded Metal Arc Welding Customized (p. 4)		
WLD 246B	Advanced Pipe Welding Practice	3	Welding Certification Preparation Customized (p. 5)		
WLD 253	SMAW Certification Practice 3/8" Mild Steel (E6011)	4	Welding Technology (p. 5)		
WLD 254	SMAW Certification Practice 3/8" Mild Steel (E7018)	4	Wire Welding Certification Preparation (p. 5)		
WLD 256	Preparation for Pipe Certification I	4	Wire Welding Customized (p. 5)		
WLD 256A	Intermediate Oxy-Acetylene Welding Practice	3	Wire and TIG Welding (p. 5)		
WLD 256B	Advanced Oxy-Acetylene Welding Practice	3	<b>MARITIME WELDING</b>		
WLD 257	Preparation for Pipe Certification II	4	Minimum 87 credits. Students must meet all certificate requirements.		
WLD 258	Preparation for Downhill Pipe Certification I	4	<b>Maritime Welding Certificate Courses</b>		
WLD 259	Preparation for Downhill Pipe Certification II	4	Code	Title	Credits
			APR 162	Calculations for the Trades <sup>§</sup>	4
			APR 250B	Equity in the Trades <sup>§</sup>	4
			COMM 215	Communicating in Teams and Small Groups <sup>§</sup>	4
			MSD 121	Leadership Skill Development	3
			MSD 151	Working with Difficult People	1
			MSD 157	Constructive Conflict Skills	1
			MSD 279	Project Management - Intro	4
			WLD 190	Maritime Welding Basics	4
			WLD 191	Maritime Flux Cored Arc Welding I	4

WLD 192	Maritime Flux Cored Arc Welding II	4
WLD 193	Maritime Fabrication I	4
WLD 194	Maritime Fabrication II	4
WLD 195	Maritime Welding Certification Practice	4
WLD 196	Maritime GMAW-P Applications	4
WLD 197	Maritime Gas Metal Arc Welding I	4
WLD 200	Maritime Gas Metal Arc Welding II	4
WLD 263	Welding Technology - Capstone	4
WLD 280A	Cooperative Education: Welding	2
WLD 291	Maritime SMAW Carbon Steel Pipe Applications	4
WLD 292	Maritime Advanced SMAW Carbon Steel Pipe Applications	4
WLD 293	Maritime GTAW Carbon Steel Pipe Applications	4
WLD 296	Introduction to Maritime Pipe Fitting	4
WLD 297	Maritime Pipe Fitting	4
WLD 297A	Maritime Socket Joints	4
Total Credits		87

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Course contains Related Instruction and cannot be substituted with another course; Related Instruction details can be viewed here.

**FLUX CORE ARC WELDING CERTIFICATION PREPARATION CAREER PATHWAY CERTIFICATE**

Minimum 14 credits. Students must meet all certificate requirements. The Fluxed Cored Arc Welding Certification Preparation Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Flux Core Arc Welding Certificate Courses**

Code	Title	Credits
WLD 136A	Beginning Wire Welding	3
WLD 136B	Basic Wire Welding	3
WLD 141	Flux-Cored Arc Welding I (Gas Shielded)	4
WLD 142	Flux-Cored Arc Welding II (Self Shielding)	4
Total Credits		14

**GAS TUNGSTEN ARC WELDING CERTIFICATION PREPARATION CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Gas Tungsten Arc Welding Certification Preparation Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Gas Tungsten Arc Welding Certification Preparation Certificate Courses**

Code	Title	Credits
WLD 221	Gas Tungsten Arc Welding Mild Steel	4
WLD 222	Gas Tungsten Arc Welding: Aluminum	4
WLD 223	Gas Tungsten Arc Welding: Stainless Steel	4
Total Credits		12

**GAS TUNGSTEN ARC WELDING CUSTOMIZED CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Gas Tungsten Arc Welding Customized Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Gas Tungsten Arc Welding Customized Certificate Courses**

Code	Title	Credits
WLD 126A	Beginning Gas Tungsten Arc Welding (Heliarc)	3
WLD 126B	Basic Gas Tungsten Arc Welding (Heliarc)	3
WLD 226A	Intermediate Gas Tungsten Arc Welding (Heliarc)	3
WLD 226B	Advanced Gas Tungsten Arc Welding (Heliarc)	3
Total Credits		12

**GENERAL FABRICATION PREPARATION CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The General Fabrication Preparation Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**General Fabrication Preparation Certificate Courses**

Code	Title	Credits
WLD 260	Beginning Fabrication	4
WLD 261	Basic Fabrication	4
WLD 262	Intermediate Fabrication	4
Total Credits		12

**MARITIME ALUMINUM WELDING AND SHIP FITTING**

Minimum 12 credits. Students must meet all certificate requirements. The Maritime Aluminum Welding and Ship Fitting Certificate is a Career Pathway.

**Maritime Aluminum Welding and Ship Fitting Certificate Courses**

Code	Title	Credits
WLD 196	Maritime GMAW-P Applications	4
WLD 197	Maritime Gas Metal Arc Welding I	4
WLD 200	Maritime Gas Metal Arc Welding II	4
Total Credits		12

**MARITIME PIPE FITTING**

Minimum 12 credits. Students must meet all certificate requirements. The Maritime Shipfitter and Welder Certificate is a Career Pathway.

**Maritime Pipe Fitting Certificate Courses**

Code	Title	Credits
WLD 296	Introduction to Maritime Pipe Fitting	4
WLD 297	Maritime Pipe Fitting	4
WLD 297A	Maritime Socket Joints	4
Total Credits		12

**MARITIME PIPE WELDING**

Minimum 12 credits. Students must meet all certificate requirements. The Maritime Shipfitter and Welder Certificate is a Career Pathway.

**Maritime Pipe Welding Certificate Courses**

Code	Title	Credits
WLD 291	Maritime SMAW Carbon Steel Pipe Applications	4
WLD 292	Maritime Advanced SMAW Carbon Steel Pipe Applications	4
WLD 293	Maritime GTAW Carbon Steel Pipe Applications	4
Total Credits		12

**MARITIME SHIPFITTER AND WELDER CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Maritime Shipfitter and Welder Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Maritime Shipfitter and Welder Certificate Courses**

Code	Title	Credits
WLD 193	Maritime Fabrication I	4
WLD 194	Maritime Fabrication II	4
WLD 195	Maritime Welding Certification Practice	4
Total Credits		12

**MARITIME WELDING CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Maritime Welding Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Maritime Welding Certificate Courses**

Code	Title	Credits
WLD 190	Maritime Welding Basics	4
WLD 191	Maritime Flux Cored Arc Welding I	4
WLD 192	Maritime Flux Cored Arc Welding II	4
Total Credits		12

**METAL FABRICATION CUSTOMIZED CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Metal Fabrication Customized Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Metal Fabrication Customized Certificate Courses**

Code	Title	Credits
WLD 176A	Beginning Fabrication Welding Practice	3
WLD 176B	Basic Fabrication Welding Practice	3
WLD 276A	Intermediate Fabrication Welding Practice	3
WLD 276B	Advanced Fabrication Welding Practice	3
Total Credits		12

**PIPE WELDING CERTIFICATION PREPARATION CAREER PATHWAY CERTIFICATE**

Minimum 24 credits. Students must meet all certificate requirements. The Pipe Welding Certification Preparation Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Pipe Welding Certification Preparation Certificate Courses**

Code	Title	Credits
WLD 224	Gas Tungsten Arc Welding: (Mild Steel) Pipe I	4
WLD 225	Gas Tungsten Arc Welding: (Mild Steel) Pipe II	4
WLD 256	Preparation for Pipe Certification I	4
WLD 257	Preparation for Pipe Certification II	4
WLD 258	Preparation for Downhill Pipe Certification I	4
WLD 259	Preparation for Downhill Pipe Certification II	4
Total Credits		24

**PIPE WELDING CUSTOMIZED CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Pipe Welding Customized Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Pipe Welding Customized Certificate Courses**

Code	Title	Credits
WLD 146A	Beginning Pipe Welding Practice	3
WLD 146B	Basic Pipe Welding Practice	3
WLD 246A	Intermediate Pipe Welding Practice	3
WLD 246B	Advanced Pipe Welding Practice	3
Total Credits		12

**SHIELDED METAL ARC WELDING CERTIFICATION PREPARATION CAREER PATHWAY CERTIFICATE**

Minimum 16 credits. Students must meet all certificate requirements. The Shielded Metal Arc Welding Certification Preparation Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Shielded Metal Arc Welding Certification Preparation Certificate Courses**

Code	Title	Credits
WLD 111	Shielded Metal Arc Welding (E7024) and Oxy-acetylene Cutting	4
WLD 112	Shielded Metal Arc Welding: Mild Steel I (E7018)	4
WLD 113	Shielded Metal Arc Welding: Mild Steel II (E7018)	4
WLD 151	SMAW Certification Practice: Unlimited Thickness Mild Steel	4
Total Credits		16

**SHIELDED METAL ARC WELDING CUSTOMIZED CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Shielded Metal Arc Welding Customized Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Shielded Metal Arc Welding Customized Certificate Courses**

Code	Title	Credits
WLD 116A	Beginning Shielded Metal Arc Welding	3
WLD 116B	Basic Welding Practice	3

WLD 216A	Intermediate Welding Practice	3
WLD 216B	Advanced Metal Arc Welding	3
Total Credits		12

**WELDING CERTIFICATION PREPARATION  
CUSTOMIZED CAREER PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Welding Certification Preparation Customized Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Welding Certification Preparation Customized Certificate Courses**

Code	Title	Credits
WLD 186A	Beginning Certification Welding Practice	3
WLD 186B	Basic Certification Welding Practice	3
WLD 286A	Intermediate Certification Welding Practice	3
WLD 286B	Advanced Certification Welding Practice	3
Total Credits		12

**WELDING TECHNOLOGY CAREER PATHWAY  
CERTIFICATE**

Minimum 44 credits. Students must meet all certificate requirements. The Welding Technology Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Welding Technology Certificate Courses**

Code	Title	Credits
WLD 102	Blueprint Reading	4
WLD 111	Shielded Metal Arc Welding (E7024) and Oxy-acetylene Cutting	4
WLD 112	Shielded Metal Arc Welding: Mild Steel I (E7018)	4
WLD 113	Shielded Metal Arc Welding: Mild Steel II (E7018)	4
WLD 131	Gas Metal Arc Welding	4
WLD 132	Gas Metal Arc Welding-Pulse	4
WLD 141	Flux-Cored Arc Welding I (Gas Shielded)	4
WLD 142	Flux-Cored Arc Welding II (Self Shielding)	4
WLD 151	SMAW Certification Practice: Unlimited Thickness Mild Steel	4
WLD 152	Flux Cored Arc Welding (Gas Shielded) Certification Practice	4
WLD 153	Flux Cored Arc Welding (Self shielding) Cert. Practice	4
Total Credits		44

**WIRE WELDING CERTIFICATION PREPARATION  
CAREER PATHWAY CERTIFICATE**

Minimum 24 credits. Students must meet all certificate requirements. The Wire Welding Certification Preparation Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Wire Welding Certification Preparation Certificate Courses**

Code	Title	Credits
WLD 131	Gas Metal Arc Welding	4
WLD 132	Gas Metal Arc Welding-Pulse	4
WLD 141	Flux-Cored Arc Welding I (Gas Shielded)	4

WLD 142	Flux-Cored Arc Welding II (Self Shielding)	4
WLD 152	Flux Cored Arc Welding (Gas Shielded) Certification Practice	4
WLD 153	Flux Cored Arc Welding (Self shielding) Cert. Practice	4
Total Credits		24

**WIRE WELDING CUSTOMIZED CAREER  
PATHWAY CERTIFICATE**

Minimum 12 credits. Students must meet all certificate requirements. The Wire Welding Customized Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Wire Welding Customized Preparation Certificate Courses**

Code	Title	Credits
WLD 136A	Beginning Wire Welding	3
WLD 136B	Basic Wire Welding	3
WLD 236A	Intermediate Wire Welding	3
WLD 236B	Advanced Wire Welding	3
Total Credits		12

**WIRE AND TIG WELDING CAREER PATHWAY  
CERTIFICATE**

Minimum 44 credits. Students must meet all certificate requirements. The Wire and TIG Welding Pathway Certificate is a Career Pathway. All courses are contained in the Welding AAS Degree.

**Wire and TIG Welding Pathway Certificate Courses**

Code	Title	Credits
WLD 101	Welding Processes & Applications	4
WLD 102	Blueprint Reading	4
WLD 131	Gas Metal Arc Welding	4
WLD 132	Gas Metal Arc Welding-Pulse	4
WLD 141	Flux-Cored Arc Welding I (Gas Shielded)	4
WLD 142	Flux-Cored Arc Welding II (Self Shielding)	4
WLD 152	Flux Cored Arc Welding (Gas Shielded) Certification Practice	4
WLD 153	Flux Cored Arc Welding (Self shielding) Cert. Practice	4
WLD 221	Gas Tungsten Arc Welding Mild Steel	4
WLD 222	Gas Tungsten Arc Welding: Aluminum	4
WLD 223	Gas Tungsten Arc Welding: Stainless Steel	4
Total Credits		44