

WELDING TECHNOLOGY, AAS

Program Code: AAS.WELDINGTECH

This program prepares students for entry into these industries: fabricated structural metal products, motor vehicles and equipment, construction and heavy construction, transportation equipment, ship and boat building and repair, aircraft and parts, self-employment and miscellaneous fabricated metal products.

CCC's welding instructors are American Welding Society (AWS) certified professionals. The program's curriculum is based on the AWS national standard for entry level welders.

Course work focuses on the knowledge and skills to perform:

- Fillet welds and groove welds using:
 - Shielded metal arc welding (SMAW)
 - Gas-metal arc welding (GMAW)
 - Flux-core arc welding (FCAW)
 - Gas-tungsten arc welding (GTAW)
 - Steel, stainless steel and aluminum
 - A variety of different electrodes;
- Plasma arc cutting (PAC), air carbon arc cutting (CAC-A) and gouging, manual and automatic oxy-fuel cutting (OFC and OFC-Track Burner) processes;
- Knowledge of materials science and welding theory;
- Print reading, inspection, quality, safety and shop practices;
- Fabrication techniques, including job cost calculations, layout, sketching, bills of material, fitting and cutting welding applied to real projects designed by industry partners.

Short-Term Training

For students who need a quick-entry strategy into the workforce, an individualized education and employment plan can be created that concentrates the knowledge and skills necessary to start or change a career path. Please see a faculty advisor for more information.

Oregon Tech Transfer Courses

The Automotive and Welding Department, in cooperation with Oregon Tech, offers a number of transferable classes into Oregon Tech's Bachelor of Applied Technology and Management degree program. Students planning to continue their studies at a four-year college should consult an advisor to obtain the most recent transfer information.

For information contact Dustin Bates, 503-594-3973, dustinb@clackamas.edu, or the Automotive and Welding Department, 503-594-3047

Outcomes

Related Instruction Outcomes

Computation

- 1 course - MTH-050 Technical Mathematics I
- Use appropriate mathematics to solve problems.

Communication

- 1 course - WR-101 Communication Skills: Occupational Writing
- Read actively, think critically, and write purposefully and capably for professional audiences.

Human Relations

- 3 credits - See **Related Instruction** for course list
- Engage in ethical communication processes that accomplish goals.

Physical Education/Health/Safety/First Aid

- 1 course - MFG-107 Industrial Safety & First Aid
- Use effective life skills to improve and maintain mental and physical wellbeing.

Program Outcomes

Upon successful completion of this program, students should be able to:

- work safely in an industrial environment around machinery, power tools, and chemicals;
- set-up, operate, and make adjustments to welding equipment as necessary to demonstrate quality workmanship that meets current American Welding Society (AWS) and industry standards;
- demonstrate the ability to set up and operate oxy-fuel cutting equipment, carbon arc cutting and gouging and plasma cutting equipment safely and skillfully;
- apply basic knowledge of blueprint reading to fabricate projects as assigned;
- complete welding projects such as fillet welds and groove welds in all positions with Gas Metal Arc Welding (GMAW), Shielded Metal Arc Welding (SMAW), Flux Core Arc Welding (FCAW), and Gas Tungsten Arc Welding (GTAW) that will meet visual inspection criteria based on AWS codes and industry standards;
- perform advanced welding on materials such as stainless steel and aluminum with all welding processes;
- pass AWS D 1.1/D 1.1M structural steel welding certification tests;
- recognize and be able to repair common welding defects according to AWS and industry standards.

Requirements

Course	Title	Credits
First Year		
First Term		
MFG-107	Industrial Safety & First Aid	3
MTH-050	Technical Mathematics I ¹	4
WLD-100	Welder's Print Reading I	3
WLD-111 or WLD-111A and WLD-111B	Shielded Metal Arc Welding (Stick) or Shielded Metal Arc Welding (Stick) and Shielded Metal Arc Welding (Stick)	8
Credits		18
Second Term		
MFG-103	Machining for Fabrication & Maintenance	3
MFG-109	Computer Literacy for Technicians	3

Course	Title	Credits
WLD-113 or WLD-113A and WLD-113B	Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) or Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed) and Gas Metal Arc Welding/Flux Core Arc Welding (Wirefeed)	8
WR-101	Communication Skills: Occupational Writing ¹	3
Credits		17
Third Term		
WLD-110	Welder Certification	4
WLD-115 or WLD-115A and WLD-115B	Gas Tungsten Arc Welding (GTAW) or Gas Tungsten Arc Welding (GTAW) and Gas Tungsten Arc Welding (GTAW)	8
Human Relations requirement		3
Credits		15
Second Year		
Fourth Term		
MFG-221	Materials Science	3
WLD-211	Advanced Shielded Metal Arc Welding	4
WLD-250	Welding Fabrication I Beginning Project	4
General electives (any college level course) ¹		3
Electives (p. 2)		3
Credits		17
Fifth Term		
WLD-200	Welder's Print Reading II	3
WLD-210	Pipe Welding	4
WLD-213	Advanced Gas Metal Arc Welding/Flux Core Arc Welding	4
WLD-251	Welding Fabrication II Intermediate Project	4
Credits		15
Sixth Term		
WLD-215	Advanced Gas Tungsten Arc Welding	4
WLD-252	Welding Fabrication III Advanced Project	4
Electives (p. 2)		4
Credits		12
Total Credits		94

- production welding
- CNC cutting machine operation
- sheet metal fabrication

¹ Substitute college transfer courses for these courses if you plan to continue your education at a higher education institution. It is recommended that you consult with a faculty advisor or a staff member in Student Services for the transfer requirements of the specific advanced program or school.

Electives

Any course with an **MFG** or **WLD** prefix not included in the program, or other technical course with approval.

Careers

Career opportunities include:

- welding
- fabrication
- construction