WELD2 – Welder Apprenticeship Level 2

Trades

Effective Term & Year: Fall 2022
Program Outline Review Date: 2024-09-01

Program Area: Trades Apprenticeship Training

Description:

This 8-week program delivers the skills, knowledge and training required for Level 2 of the Welder Apprenticeship program. Program competencies include theory and practical techniques in the following processes: shielded metal arc welding(SMAW),gas metal arc welding (GMAW) and flux core arc welding(FCAW), gas metal arc welding (PULSED) GMAW-P , metal core arc welding (MCAW) , and gas tungsten arc welding (GTAW). Level 2 apprentices will continue to develop and enhance their theoretical knowledge of metallurgy and interpretation of blueprints and fabrication of components. Safe work practices are important in this trade and are emphasized, reinforced and practiced throughout the program.

Credentials Granted:

Level 2 Technical Training credit of the Welder Apprenticeship program from SkilledTradesBC

Delivery Methods: On-Campus (Face-to-Face), Online

Program Duration: 8 weeks

Instructional Activity and Hours:

Activity	Hours
Instructional Hours (hrs/wk)	28 hrs/wk
Directed Studies (hrs/wk)	2 hrs/wk
Total (hrs/wk)	30 hrs/wk

Total Program Hours	240 Hours

Content Weighting:

Activity	Percentage
Theory	20%
Practical Skills	80%

Admission Requirements:

Sponsored Welder apprentice who has successfully completed Level 1 Welder apprentice technical training.

Flexible Assessment:

Credit cannot be awarded for this program through Flexible Assessment.

Program Transfer Credit:

For information about block transfer agreements between programs in British Columbia, Alberta, and elsewhere, please visit http://www.cotr.bc.ca/transfer.

To minimize transfer issues, check with an academic advisor at the institution that will receive the transfer credits.

Textbooks and Required Resources:

Textbook selection varies by instructor and may change from year to year. At the Program Outline Effective Date the following textbooks were in use (most current edition):

Welding “C” Level Modules, Queen’s Printer.

Althouse, A.D., Turnquist, C.H., Bowditch, W.A., Bowditch, K.E., & Bowditch, M.A., (2013). *Modern Welding.* (11th ed). Tinley Park, IL: The Goodheart – Wilcox Company Inc.

Program Competencies and Technical Training Content:

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

WEAP 201 Occupational Skills (10 hrs)

- Apply lifting, hoisting and rigging procedures

WEAP 204 Shielded Metal Arc Welding (SMAW) (80 hrs)

- Select electrodes for SMAW
- Use the SMAW process on low carbon steel plate and pipe
- Describe the SMAW process on grey cast iron

WEAP 205 Semi-Automatic Welding (82 hrs)

- Use the GMAW and GMAW-P process
- Use the FCAW process
- Use the MCAW process
- Use the SAW process

WEAP 206 Gas Tungsten Arc Welding (GTAW) (25 hrs)

- Describe the GTAW process and its application
- Describe GTAW equipment and its operation
- Describe the application of GTAW for ferrous metals
- Use the GTAW process for ferrous metals
- Use the GTAW process for stainless steel

WEAP 207 Basic Metallurgy (7 hrs)

- Describe production processes for manufacturing metals
- Describe mechanical and physical properties of ferrous and non-ferrous metals
- Describe common ferrous, non-ferrous and reactive metals and their weldability

WEAP 208 Welding Drawings, Layout and Fabrication (20 hrs)

- Read and interpret drawings
- Perform basic drafting
- Perform mathematical calculations
- Interpret and apply mechanical drawings and layout components
- Fabricate weldments
- Costing and estimating

Evaluation and Assessment:

WELDING APPRENTICESHIP LEVEL 2

COTR COURSE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
WEAP 201	Occupational Skills	10%	10%
WEAP 204	Shielded Metal Arc Welding (SMAW)	25%	35%
WEAP 205	Semi-Automatic Welding and Automatic Welding	25%	37%
WEAP 207	Basic Metallurgy	10%	1%
WEAP 208	Welding Drawings, Layout and Fabrication	15%	5%
WEAP 206	Gas Tungston Arc Welding (GTAW)	15%	12%
	Total	**100%**	**100%**
In-school theory & practical subject competency weighting		20%	80%
Final in-school percentage score		**IN-SCHOOL %**	
In-school Percentage Score Combined theory and practical subject competency multiplied by		80%	
Standard Level Exam Percentage Score The exam score is multiplied by		20%	
Final Percentage Score		**FINAL%**	

Pass Requirements:

1. Successful completion of the in-school training is defined as a final overall minumum of 70% to meet SkilledTradesBC standards.

    - Students must maintain an acceptable level of attendance, complete all assigned projects and pass all exams to successfully complete the program.

Students must provide their own:

- steel-toed leather work boots
- safety glasses
- welding gloves
- flame retardant work clothes (cotton or wool)
- leather welding jacket
- welding helmet (#11 lens)
- welding goggles (#5 lens)
- Reference Manuals
- half mask respirator
- P100 respirator cartridges (3 to 4 sets)

Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Conduct (plagiarism, other cheating, behavioral misconduct)
- Policy 2.4.8 Academic Performance
- Policy 2.5.3 Grade Appeal
- Policy 2.4.9 Student Concerns Re Faculty

Program Grade

COM	NCG
Completed to the defined standard – 70% or greater	No Credit Granted – less than 70%

Program Changes:

Information contained in program outlines is correct at the time of publication. Content of the program is revised on an ongoing basis to ensure relevance to changing educational, employment, and marketing needs. The instructor endeavours to provide notice of changes to students as soon as possible. The instructor reserves the right to add material to programs.

Industry Training:

The program competencies and technical training content delivered in this program follow the SkilledTradesBC Program Outline for this trade.

Safety Catalog:

WorkSafeBC regulations apply to all trades programs. Students are expected to follow all safe work practices and have high regard for the safety of others as well as of themselves. Students are responsible to wear personal protective equipment (PPE) as directed. At a minimum, students must provide and wear approved safety footwear and eyewear at all times in the shop. Additional PPE may be required for specific tasks. Students are expected to wear clothing suitable for working safely in the shop.