WELD3 – Welder Apprenticeship Level 3

Trades

Effective Term & Year: Fall 2024
Program Outline Review Date: 2029-04-01

Program Area: Trades Apprenticeship Training

Description:

This program covers program competencies required for Level 3 of the Welder Apprenticeship program. Apprentices receive training in the following welding processes: Shielded Metal Arc Welding (SMAW) on low carbon steel plate and pipe, Semi Automatic and Automatic Welding (GMAW, GMAW-P), using combined GMAW, MCAW, and FCAW processes, and Gas Tungsten Arc Welding (GTAW) for ferrous metals and aluminum. Students also cover basic metallurgy related to ferrous, non-ferrous, and reactive metals, and aluminum and aluminum alloys and will learn how to interpret welding drawings and fabricate weldments. Quality control and inspection requirements and welding standards, codes, specifications, and welder jurisdictional bodies are also covered within the program. Safe work practices related to the welder trade are reinforced throughout the program.

Credentials Granted:

Upon successful completion of the 10-week Level 3 Welder Apprenticeship program, students receive:

- Level 3 Technical Training credit of the Welder Apprenticeship program from SkilledTradesBC
- College of the Rockies Welder Apprenticeship Level 3 Certificate

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

Program Duration: 10 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	300 Hours

Content Weighting:

Activity	Percentage
Theory	20%
Practical Skills	80%

Admission Requirements:

Sponsored Welder apprentice who has successfully completed Level 1 and 2 Welder apprentice technical training.

Or is a sponsored Welder apprentice and has completed the Welder Foundation program technical training.

Prior Learning and Recognition:

Credit cannot be awarded for this program through Prior Learning Assessment and Recognition.

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 “B” 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 304 Shielded Metal Arc Welding (SMAW) (140 hrs)

- Select electrodes for SMAW
- Use the SMAW process on low carbon steel plate and pipe

WEAP 305 Semi-automatic and Automatic Welding (44 hrs)

- Use the GMAW and GMAW-P process
- Use combined GMAW, MCAW and FCAW processes

WEAP 306 Gas Tungsten Arc Welding (GTAW) (68 hrs)

- Use the GTAW process for ferrous metals
- Use the GTAW process for aluminum

WEAP 307 Basic Metallurgy (6 hrs)

- Describe mechanical and physical properties of ferrous and non-ferrous metals
- Describe common ferrous, non-ferrous and reactive metals and their weldability
- Describe the grain structure of metals
- Describe aluminum, aluminum alloys and their weldability

WEAP 308 Welding Drawings, Layout and Fabrication (12 hrs)

- Read and interpret drawings
- Interpret and apply mechanical drawings and layout components
- Fabricate weldments
- Costing and estimating

WEAP 309 Quality Control and Inspection (5 hrs)

- Describe basic welding quality control and inspection requirements
- Describe inspection and testing procedures
- Describe the scope of the welding supervisor and inspector responsibilities

WEAP 310 Standards, Codes, Specifications and Welder Qualifications (5 hrs)

- Identify applicable standards, codes, specifications and jurisdictional bodies
- Describe compliance with weld procedure specifications (WPS) and data sheets

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Evaluation and Assessment:

WELDER APPRENTICESHIP LEVEL 3

COTR COURSE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
WEAP 304	Shielded Metal Arc Welding (SMAW)	15%	45%
WEAP 305	Semi-Automatic and Automatic Welding	10%	20%
WEAP 306	Gas Tungsten Arc Welding (GTAW)	15%	30%
WEAP 307	Basic Metallurgy	15%	0%
WEAP 308	Welding Drawings, Layout, and Fabrication	15%	5%
WEAP 309	Quality Control and Inspection	15%	0%
WEAP 310	Standards, Codes, Specifications and Welder Qualifications	15%	0%
	Total	**100%**	**100%**
In-School Theory/Practical Subject Competency Weighting		20%	80%

Final in-school percentage score

Apprentices must achieve a minimum 70% as the final in-school percentage score to be eligible to write the Interprovincial Red Seal or ITA CofQ exam.

IN-SCHOOL %

Pass Requirements:

Students must obtain a mark of 70% or better in theory and 70% on practical projects to successfully complete the program.

All apprentices who complete Level 3 of the Welder program with a FINAL level percentage score of 70% or greater will write the Interprovincial Red Seal examination as their final assessment.

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

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 2.1.4 Course Audit
- Policy 2.4.1 Credential Framework
- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Rights, Responsibilities and Conduct
- Policy 2.4.8 Academic Performance
- Policy 2.4.9 Student Feedback and Concerns
- Policy 2.4.11 Storage of Academic Works
- Policy 2.5.3 Student Appeal
- Policy 2.5.5 Prior Learning Assessment and Recognition (PLAR)

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.