WELDB – Welder Modular B

Trades

Effective Term & Year: Fall 2022
Program Outline Review Date: 2026-09-01

Program Area: Trades Apprenticeship Training

Description:

This program covers program competencies required for Modular “B” Level Welder program. Students 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) on 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 16 week Modular “B” Level program, students receive:

- Modular B Certificate

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

Program Duration: 16 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	480 Hours

Content Weighting:

Activity	Percentage
Theory	20%
Practical Skills	80%

Admission Requirements:

Must have completed Welder Foundation and recommended 1,000 work based training hours.

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 “B” Level Modules

Program Competencies and Technical Training Content:

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

WELD P7

(Line D) **Shielded Metal Arc Welding (SMAW) (225 hrs.)**

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

WELD P8/P9

(Line E) **Semi-automatic and Automatic Welding (71 hrs.)**

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

WELD P10

(Line F) **Gas Tungsten Arc Welding (GTAW) (108 hrs.)**

- Use the GTAW process for ferrous metals on pipe and plate
- Use the GTAW process for aluminum

WELD RK7

(Line H) **Basic Metallurgy (10 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

WELD RK6

(Line I) **Welding Drawings, Layout and Fabrication (18 hrs.)**

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

WELD RK4

(Line J) **Quality Control and Inspection (9 hrs.)**

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

WELD RK5

(Line K) **Standards, Codes, Specifications and Welder Qualifications (9 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 MODULAR B

COTR COURSE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
WELD P7 (Line D)	Shielded Metal Arc Welding (SMAW)	15%	45%
WELD P8/P9 (Line E)	Semi-Automatic and Automatic Welding	10%	20%
WELD P10 (Line F)	Gas Tungsten Arc Welding (GTAW)	15%	30%
WELD RK7 (Line H)	Basic Metallurgy	15%	0%
WELD RK6 (Line I)	Welding Drawings, Layout, and Fabrication	15%	5%
WELD RK4 (Line J)	Quality Control and Inspection	15%	0%
WELD RK5 (Line K)	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 exam.

IN-SCHOOL %

Pass Requirements:

Students must obtain a mark of 70% or better in theory and practical projects 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

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.