

YOUR TRADE CERTIFICATION GUIDEBOOK

# WELDER



**WELDER  
APPRENTICESHIP  
AS OF MARCH 2017**

**ita**  
**YOUR TICKET.**

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## YOUR TRADES TRAINING

It's an exciting time to be in the skilled trades industry! BC is growing and so is the demand for skilled tradespeople in the province. Almost one million jobs are expected to be created by 2025 in BC.

With the increasing number of retirees in the trades community, there is a need for more driven individuals like you to pursue careers in trades. From the building you're sitting in right now to the cars you drove to get there, there are a number of tradespeople that were involved in the design, creation, and maintenance of them.

Congratulations on starting your journey to certification. You are on your way to becoming a key contributor to BC's trade industry and your community.

## ABOUT INDUSTRY TRAINING AUTHORITY:

The Industry Training Authority (ITA) leads and coordinates British Columbia's skilled trades system. ITA works with employers, employees, industry, labour, training providers, and government to issue credentials, manage apprenticeships, set program standards, and increase opportunities in the trades.

# APPRENTICESHIP RESPONSIBILITIES

**Work-Based Hours (WBT)** – Reporting your work-based training hours is essential to completing your Apprenticeship. It is your responsibility to confirm with your Sponsor/Employer that your hours have been reported to ITA and applied to your Apprenticeship record.

If your previous Employer has not submitted work based hours for you, the WBT form allows your current Sponsor/Employer to sign off those hours.

In addition to reporting your hours to the ITA with the Work-Based Hour form, your sponsor will need to sign off on your processes and competencies in your logbook. You can find a copy of the **work-based training form** here: [www.itabc.ca/apply-apprenticeship/forms](http://www.itabc.ca/apply-apprenticeship/forms)

**Sponsor/Employer** – If you have changed your employer it is important to update your Apprenticeship records with this information. Sponsors have the responsibility to sign off work hours and Recommendation for Certification for completion.

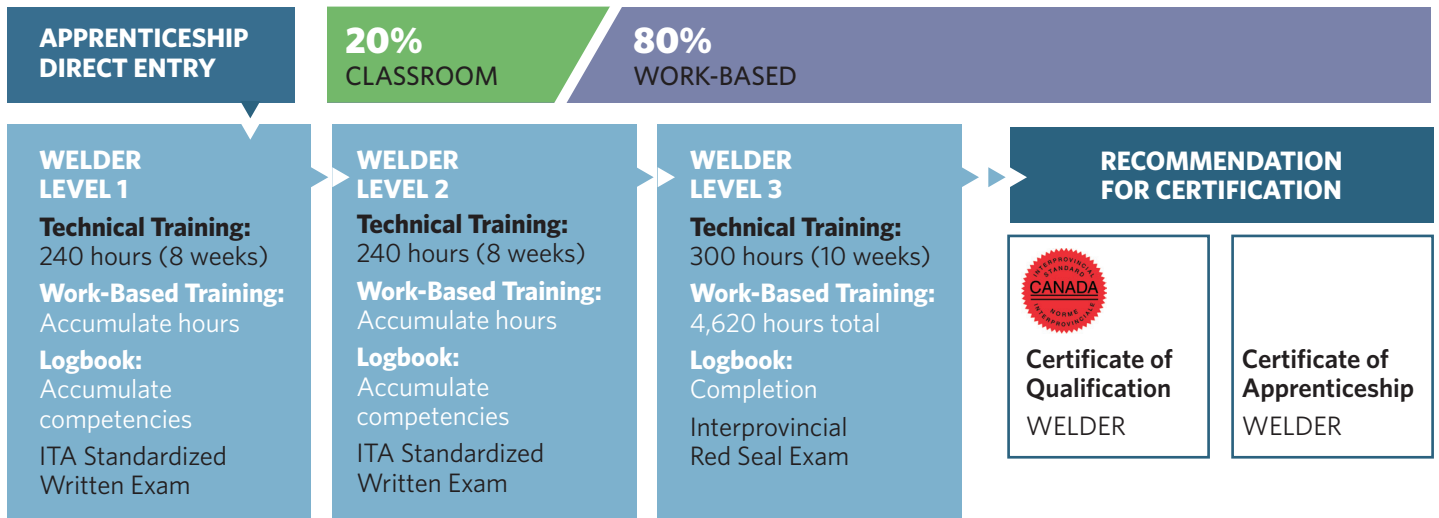
**Contact Information** – It is your responsibility to ensure your contact information is up to date (address, phone, name changes, etc.) This can be done by logging into Direct Access or phoning Customer Service.

**Direct Access** – By logging into Direct Access you can view your Apprenticeship records (transcripts, exam marks, etc). [www.itabc.ca/apply-apprenticeship/direct-access](http://www.itabc.ca/apply-apprenticeship/direct-access)

**Technical Training Registration** – Speak with your employer about when will be a good time for you to go back to school for your next level of technical training. Once you and your employer have agreed on a time, it is your responsibility to register for technical training. A list of Designated Training Providers can be found here: [www.tradestrainingbc.ca](http://www.tradestrainingbc.ca).

It is recommended to have the conversation with your employer and register for technical training ahead of time, as classrooms have limited space.

## APPRENTICESHIP PATHWAY - MAPPING YOUR WAY TO CERTIFICATION



# GAINING COMPETENCIES

Below are skills and knowledge you will gain from technical and hands on training.

Program competencies can change. Check Program Outline, link below, for accuracy.

[www.itabc.ca/sites/default/files/program-information/Welder-Outline-oct-2017-harmonized.pdf](http://www.itabc.ca/sites/default/files/program-information/Welder-Outline-oct-2017-harmonized.pdf)

## ✓ WELDER LEVEL ONE

### Occupational Skills

- Describe safe working practices
- Perform basic trade related mathematical calculations
- Use and maintain measuring and layout tools
- Use and maintain hand tools
- Use and maintain power tools (electric and pneumatic)
- Describe shop materials
- Apply lifting, hoisting and rigging procedures

### Cutting and Gouging Processes

- Describe Oxy-Fuel Cutting (OFC) processes and their applications
- Describe Oxy-Fuel Cutting (OFC) and equipment and its operation
- Perform freehand and guided cuts on low carbon steel (OFC)
- Use automatic and semi-automatic cutting machines (OFC)
- Describe CAC-A and PAC processes, equipment and their applications
- Use CAC-A and PAC cutting and gouging processes and equipment

### Fusion and Braze Welding (TB) Using the Oxy-Fuel (OFW) Process

- Describe fusion welding, braze welding and brazing processes and their applications
- Describe fusion welding, braze welding and brazing equipment and its operation
- Describe filler metals, fluxes and tips used for fusion welding, braze welding and brazing
- Describe joint design and weld positions for OFW
- Fusion weld on low carbon steel sheet
- Braze weld (TB) using the OFW process
- Silver alloy braze on similar and dissimilar metals

### Shielded Metal Arc Welding (SMAW)

- Describe the SMAW process
- Describe SMAW equipment and its operation
- Select electrodes for SMAW
- Describe basic joint design and weld positions for SMAW
- Describe weld faults and distortion in fabrications in SMAW
- Use the SMAW process on low carbon steel plate and pipe
- Use the hardsurfacing process on low carbon steel
- Use the SMAW process on stainless steel and/or low carbon steel plate and pipe

- Semi-Automatic and Automatic Welding
- Describe GMAW, GMAW-P, FCAW, MCAW and SAW processes and their applications
- Describe semi-automatic and automatic welding equipment and its operation
- Describe filler metal and shielding gases for semi-automatic and automatic processes
- Use the GMAW and GMAW-P processes
- Use the FCAW process

### Welding Drawings, Layout and Fabrication

- Identify common welding symbols and bolted connections

## ✓ WELDER LEVEL TWO

### Occupational Skills

- Apply lifting, hoisting and rigging procedures

### Shielded Metal Arc Welding (SMAW)

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

## **Semi-Automatic and Automatic Welding**

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

## **Gas Tungsten Arc Welding (GTAW)**

- 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

## **Basic Metallurgy**

- 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

## **Welding Drawings, Layout and Fabrication**

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

## ✓ **WELDER LEVEL 3**

### **Shielded Metal Arc Welding (SMAW)**

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

### **Semi-automatic and Automatic Welding**

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

### **Gas Tungsten Arc Welding (GTAW)**

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

### **Basic Metallurgy**

- 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

### **Welding Drawings, Layout and Fabrication**

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

## **Quality Control and Inspection**

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

## **Standards, Codes, Specifications and Welder Qualifications**

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

# STANDARD LEVEL EXAMS

Standard Level Exams (SLEs) are usually written on the last day of in-school training and will count for 20% of your overall mark.

**Below is a list for general areas of competencies covered in SLEs for each level.**

The list of competencies covered in the SLEs can change. Check the **Exam Weighting Charts** for accuracy at:

[www.itabc.ca/program/welder](http://www.itabc.ca/program/welder)

LEVEL 1	LEVEL 2
<ul style="list-style-type: none"><li>A. Occupational Skills</li><li>B. Cutting &amp; Gouging Processes</li><li>C. Fusion and Braze Welding (TB) Using The Oxy-Fuel (Ofw) Process</li><li>D. Shielded Metal Arc Welding (SMAW)</li><li>E. Semi-Automatic And Automatic Welding</li><li>I. Welding Drawings, Layout and Fabrication</li></ul>	<ul style="list-style-type: none"><li>A. Occupational Skills</li><li>D. Shielded Metal Arc Welding (SMAW)</li><li>E. Semi-Automatic and Automatic Welding</li><li>F. Gas Tungsten Arc Welding (GTAW)</li><li>H. Basic Metallurgy</li><li>I. Welding Drawings, Layout and Fabrication</li></ul>

## REMINDERS

- You must bring a piece of Government PHOTO identification. The ID must be VALID and CURRENT. Expired IDs and IDs with no expiry date will not be accepted.
- Your Training Provider will inform you of the time and location of the exam. Arrive early.

## LOGBOOK

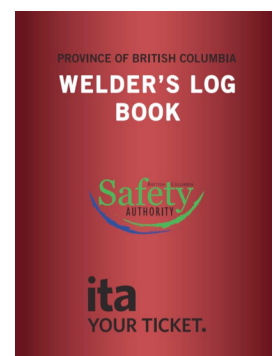
### What is a logbook?

Your log book is an important record of your apprenticeship. It is a complete record of your technical training, competencies, certifications, endorsements and employment history. It should be presented to employers as proof of your welding qualifications and experience.

While your hours are reported to the ITA via the Work-Based Hour form, your logbook will record the processes and competencies you have completed. Each section of your logbook will be reviewed by ITA to determine if you have met the completion requirements of your program.

### When will I receive my Logbook?

After you have completed your foundation program or Level 1 technical training, your ITA-approved technical training provider will provide you with the logbook.



# RED SEAL INTER-PROVINCIAL EXAM

The Red Seal Inter-Provincial Exam covers a whole range of competencies from all your levels of technical training.

The table below is a general breakdown of areas of competencies covered in the Red Seal IP exam.

The areas of competencies covered in the Red Seal IP exam can change. Check **Occupational Standard for current exams** at [www.red-seal.ca/trades/w.2ld.2r-eng.html](http://www.red-seal.ca/trades/w.2ld.2r-eng.html) for accuracy.

<b>BLOCK A</b>   Common Occupational Skills	Task 1	Uses and maintains tools and equipment
	Task 2	Uses access and material handling equipment
	Task 3	Performs safety-related activities
	Task 4	Organizes work
	Task 5	Performs routine trade activities
<b>BLOCK B</b>   Fabrication and Preparation of Components for Welding	Task 6	Performs Layout
	Task 7	Fabricates components
<b>BLOCK C</b>   Cutting and Gouging	Task 8	Uses tools and equipment for non-thermal cutting and grinding
	Task 9	Uses oxy-fuel gas cutting (OFC) process for cutting and gouging
	Task 10	Uses plasma arc cutting (PAC) process for cutting and gouging
	Task 11	Uses air carbon arc cutting (CAC-A) process for cutting and gouging
<b>BLOCK D</b>   Welding Processes	Task 12	Welds using shielded metal arc welding (SMAW) process
	Task 13	Welds using flux core arc welding (FCAW, metal core arc welding (MCAW) and gas tungsten arc welding (GTAW) process.
	Task 14	Welds using gas tungsten arc welding (GTAW) process
	Task 15	Welds using submerged arc welding (SAW) process

**Note:** Based on the Welder National Occupational Analysis (NOA).

A copy of the Welder NOA is available at

[www.red-seal.ca/docms/welder\\_noa2014\\_eng.pdf](http://www.red-seal.ca/docms/welder_noa2014_eng.pdf)





# FREQUENTLY ASKED QUESTIONS

## **HOW DOES MY SPONSOR/EMPLOYER SUBMIT HOURS?**

The sponsor/employer will submit Work Based Training Hours via Direct Access, email, mail, or fax.

## **WHAT IF I WORKED FOR A SPONSOR/EMPLOYER AND THEY DID NOT SUBMIT MY HOURS?**

You can talk to your current sponsor to see if they are willing to submit the hours for the work you did previously on a work based training report.

## **DOES MY SPONSOR/EMPLOYER HAVE TO LET ME GO TO SCHOOL?**

You need to discuss your plans for school with your sponsor/employer to see if they are able to release you to go to school. Let them know of upcoming training locations and dates.

## **HOW DO I KNOW WHAT MY GRADES ARE FOR SCHOOL?**

The Trades Training school will submit your marks to ITA. You and your sponsor/employer will receive a notice by email.

## **WHERE DO I GET MY PROGRESSION LETTER?**

Upon completion of your technical training and required work-based hours for Level 1 and 2, ITA will send you the Progression Letter by email.

You will need this Progression Letter to apply for your Apprenticeship Incentive Grant. Please review deadline dates and required number of work place hours at: [www.itabc.ca/grants-tax-credits/grants](http://www.itabc.ca/grants-tax-credits/grants)

## **WHY DO I NEED TO RECORD MY WORK HOURS BOTH ON-LINE AND IN MY LOGBOOK?**

The Work-Based Hour form reports your work hours towards your apprenticeship completion. The logbook records the processes and competencies you have completed during those hours. It will also record work history, certificates, and endorsements. Completion of both your hour requirement and logbook is required for certification

## **WHEN I FINISH MY TRAINING AND REQUIRED HOURS IN EACH LEVEL, AM I CERTIFIED?**

No, after you have completed technical training, passed the Certificate of Qualification exam and submitted the required WBT hours, you will need to submit your logbook to the ITA for assessment. The logbook must be submitted with the Welder Recommendation for Certification which can be found on our website under the forms page. The RFC must be signed by a certified tradesperson (same trade) and sent to the ITA with your logbook for assessment. ITA will send your certificates to your employer, unless otherwise stated on the RFC form.

## **ARE THERE ANY GRANTS FOR FINISHING MY CERTIFICATION?**

Yes. You can apply for the Apprenticeship Completion Grant once you receive your Red Seal Inter-Provincial Endorsement Certificate. You will need a copy of your certificate to apply.

[www.canada.ca/en/employment-social-development/services/apprentices/grants.html](http://www.canada.ca/en/employment-social-development/services/apprentices/grants.html)

## **ARE THERE ANY INCENTIVES FOR MY EMPLOYER?**

Employers can apply for Tax Credits as their apprentice progresses through the trade. The tax information letter can be found on Direct Access.

## **WHAT IS THE MPAW?**

The Multi-Process Alloy Welding (MPAW) is an optional endorsement which enables a welder to weld specialized alloys. To register for this program you must hold the Welder Certificate of Qualification or Welder B with the Interprovincial Red Seal Endorsement.

# FINANCIAL SUPPORT FOR APPRENTICES

As a registered apprentice, you can apply for financial support. You're also eligible to apply for Employment Insurance. Federal and provincial financial support information can be found in the two links below:

[www.itabc.ca/grants-tax-credits/grants](http://www.itabc.ca/grants-tax-credits/grants)

[www.esdc.gc.ca/en/reports/apprentices/support\\_brochure.page](http://www.esdc.gc.ca/en/reports/apprentices/support_brochure.page)

Apprentice Supports*	Direct Entry Apprenticeship Hired and registered by Sponsor without prior Foundation/ apprentice training	Foundation Training (a.k.a: pre-apprentice)	Apprentice Technical Training (Levels 1, 2, 3, 4)
<b>Skills Training Funding Tuition*</b> See Notes A+C		✓	
<b>Indigenous Skills Training Funding Tuition*</b> (eligible Indigenous applicants) ISETS agencies See Notes A+C		✓	✓
<b>Student Aid/Loans*</b> Only Foundation Training over 12 weeks long BC ACCESS Grant (only for training in high demand trades) Bursaries and Scholarships		✓	
<b>Canada Apprentice Loan</b>			✓
<b>Wage Subsidy (new hires)*</b> WorkBC / ASETS agencies	✓		
<b>EI and AOP: Apprentice Financial Benefits for Apprentice Training *</b> (Apprentice Supports Online Portal) WorkBC and Service Canada (for EI-eligible clients) <sup>2</sup>			✓
<b>Training Tax Credits Non-Red Seal and Red Seal*</b> Credit amount varies, please refer to CRA			✓
<b>Incentive and Completion Grants, Red Seal Trades*</b> Service Canada		✓	✓
<b>ITA Website Resources*</b> (www.itabc.ca) Direct Access Online Apprenticeship Reporting Trade Profile	✓	✓	✓

\*Support is dependent on eligibility and varies by trade, level of training, and whether or not it is a Red Seal or Non-Red Seal trade.

Note A: WorkBC and EPBC. Indigenous resources: ISETS agencies, Victoria Foundation, Bands, bursaries, scholarships, STEP

Note B: Bursaries may be available through individual training institutions

Note C: ACE IT/SSA coordinated through School Districts



# CONNECT WITH US!

[www.itabc.ca](http://www.itabc.ca)



## CONTACT EMAIL OR CALL

**778.328.8700 or call TOLL FREE in BC: 1.866.660.6011**

**[customerservice@itabc.ca](mailto:customerservice@itabc.ca)**

Our customer experience representatives are accessible, from 8:00 a.m. to 4:30 p.m. PT, Monday to Friday, and can provide you with quick and easy access to information regarding all of ITA's services. Call or email us today for information on training and apprenticeship, including registration, examinations and certification, or to answer any other questions you may have.



## CONNECT LOCALLY

Looking for someone to help you in your community? ITA has regional Apprenticeship Advisors across the province to support local skilled trades apprentices and employers. Find the Apprenticeship Advisor closest to you—all you need is your postal code.

Do you want to learn more about how ITA works with industry? Feel free to contact any of our Industry Relations Team to better understand each industry's needs in BC and to learn more about how they are working to ensure we have the right skilled workers where they are needed.



## VISIT CUSTOMER CENTRE

**ITA's Customer Support Centre**

**8th Floor - 8100 Granville Avenue, Richmond, BC V6Y 3T6**

We are happy to serve you in-person at our Richmond Customer Support Centre, and through our regional Apprenticeship Advisors, who are available to serve you in communities across the province.



## SUBSCRIBE TO TRADES TALK

Keep up to date on ITA in action as well as other trades and industry news by subscribing to our quarterly newsletter, Trades Talk.



Industry Training Authority



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