Skilled Trades Ontario | Métiers spécialisés Ontario

Apprenticeship
Training Standard
Logbook

Instrumentation and Control Technician

447A

2017

Apprenticeship Training Standard

The Apprenticeship Training Standard or herein after referred to as “Logbook” is a document issued to Apprentices who sign a Registered Training Agreement in the Province of Ontario as an official record of training. It is to be used by the Apprentice and Sponsor/trainer to guide the process of skills development in a particular trade.

Training As An Apprentice

- ✓ Ensure you, your sponsor, and your witness sign a Training Agreement with the Ministry of Labour, Immigration, Training and Skills Development. Once it is registered, you will receive a copy of the registered Training Agreement for your records.
- ✓ Notify the local Service Delivery Office **immediately** if any changes to contact information or training agreement, especially if you change sponsors.
- ✓ Review the Logbook regularly with your trainer and sponsor to discuss your progress, ask questions, seek feedback and have the trainer **sign-off on competencies**
- ✓ Keep an accurate record of the hours you work.
- ✓ Attend classroom training when it is offered.
- ✓ Apply for the financial incentives for which you are eligible.

Completing Your Logbook

- ✓ **Complete the Sponsor Record Form –** A form must be completed for each Sponsor/Trainer used during your apprenticeship.
- ✓ **Confirm Skill Sign-off is Complete**
  - **You and your trainer** sign-off each required skill to confirm that you have demonstrated competency in that skill.
  - Shaded boxes in your Logbook mean the skills are optional and do not have to be confirmed by your trainer or sponsor. However, you are encouraged to complete them as part of your training.
- ✓ **Confirm Skill Set Sign-off is Complete**
  - After you and your trainer have signed-off all the required skills in a skill set, your sponsor signs the signature box on the form in **Appendix C – *“Skill Set Completion for Sponsors”*** to confirm your completion of all competencies within each skill set.

This document is the property of the apprentice named inside and represents the official record of your training. For information about completing your apprenticeship, see inside of back cover**.**

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Apprentice Name:_____

Address: _____

_____

Phone Number: _____

Email Address: _____

Trade: _____

Training Agreement # (for Compulsory and Non-Compulsory trades):

STO Account No. (for Compulsory trades only):

This document is the property of the Apprentice named herein and represents the official record of their training.

If you have questions about the use of this Logbook or about your Apprenticeship program, contact your local Service Delivery Office (see Appendix D in this book) or the Employment Ontario hotline at: 1-800-387-5656.

Apprenticeship Pathway to a Certificate of Qualification

Phase 1: Registration

Submit Application for Apprenticeship Training through the on-line portal or to local Service Delivery Office

For on-line portal, please follow instructions for registration. You will need to create a *My Ontario* account to access online services.

Training agreement signed and registered by both apprentice and sponsor

Phase 2: Apprenticeship

Access your Apprenticeship Training Standard Logbook**
skilledtradesontario.ca/about-trades/trades-information

** This is the official record of your training progress. You are responsible for keeping it up-to-date.

Complete on-the-job training

Demonstrate and receive sign-off on the competencies/skills in your Apprenticeship Training Standard Logbook

Complete in-school training

Attend and complete the in-class training set out in the Curriculum Training Standard

Apprentices eligible to apply for apprenticeship incentive grants (Red Seal trades) and loans.

Review and finalize your logbook with your sponsor

Submit proof of apprenticeship completion
via email, in-person or digital portal

Your Apprenticeship Training Standard Logbook details completion requirements. Submit the following:

- completed Apprenticeship Training Standard Logbook with signatures
- proof of hours

Certificate of Apprenticeship is issued

Phase 3: Certification

Trades without examination

CofA is the final step of the program

Trades with examination (compulsory and non-compulsory trades)*

Provisional Certificate of Qualification issued for a 12 month term

To prepare for the CofQ examination download the Provincial and/or Red Seal Exam preparation guides.

Make payment for your Certificate of Qualification examination

Call to make a payment (647-847-3000 or 1-855-299-0028)

Schedule a date to write your Examination

To schedule your examination, contact your local Service Delivery Office.

Pass Certificate of Qualification examination

Apprentices eligible to apply for Apprenticeship Completion Grant (Red Seal trades) or Apprentice Completion Bonus (non-Red Seal)

Certificate of Qualification is issued

Upon completion, Sponsors may be eligible for Apprenticeship grants, incentives, bonuses or tax credits

* For a list of trades subject to a certification examination, visit: skilledtradesontario.ca

Draft version: 2022-03-16

Table of Contents

Please Note: This Standard has been revised to reflect the visual identity of Skilled Trades Ontario (STO) which replaced the Ontario College of Trades on January 1, 2022. The content of this Standard may refer to the former organization; however, all trade specific information or content remains relevant and accurate based on the original date of publishing.

Please refer to STO's website: skilledtradesontario.ca for the most accurate and up to date information. For information about BOSTA and its regulations, please visit *Building Opportunities in the Skilled Trades Act, 2021* (BOSTA).

Any updates to this publication are available on-line; to download this document in PDF format, please follow the link: Skilled Trades Ontario.ca.

Maintained with transfer to Skilled Trades Ontario 2017 (V100)

Foreword: Purpose, Terms and Conditions of the registered Training Agreement

Purpose:

- Prior to starting official apprenticeship activities, the apprentice, sponsor and a witness are required to sign a Training Agreement.
- The Training Agreement that you have signed is an important legal document that outlines your responsibilities as an apprentice and the responsibilities of your sponsor.
- Once registered, this training agreement (or contract) marks the start of your formal agreement between the apprentice, the sponsor and the Ministry.
- For compulsory trades, the apprenticeship registration document must be accessible when working.

The Apprentice agrees:

- **To inform the local Service Delivery Office of any change to your contact information or change in sponsor within 7 days;**
- To follow the Sponsor's and Trainer's lawful instructions and make every effort to acquire the skills identified in the Logbook for the Trade which is part of the apprenticeship program established by Skilled Trades Ontario for the trade;
- To obtain written verification from the Sponsor and the Trainer(s) that the requirements in the Logbook for the trade have been met.
- When you receive an "Offer of Classroom Training", confirm your attendance by following the instructions in the offer. Failure to do so may result in losing your opportunity to attend school which delays the completion of your apprenticeship.

The Sponsor agrees:

- To ensure that the Apprentice is provided with the training required as part of the apprenticeship program established by Skilled Trades Ontario for this trade;
- To review the progress of training with the Apprentice, and with the Trainer(s) where the Sponsor and the Trainer are not the same party.
- Release your apprentice from work to attend in-school training without penalty to the apprentice.
- To maintain the journeyperson/apprentice ratio for your trade, if applicable.
- To monitor their apprentice(s) progress
- To ensure that the Trainer(s) verifies, in writing, when each skill identified in the Logbook for the trade has been successfully completed by the Apprentice;
- To contact the Ministry should any changes in your capacity to train, your contact information, or your apprentice's status in the program change.

Trade Specific Resources and Links

Trade Specific Resource	Link
Red Seal Program	red-seal.ca
Apprenticeship in Ontario	ontario.ca/page/apprenticeship-ontario
Employment Ontario	employmentontario.ca
Service Canada	servicecanada.gc.ca
Building Opportunities in the Skilled Trades Act, 2021	Building Opportunities in the Skilled Trades Act, 2021, S.O. 2021, c. 28 - Bill 288 (ontario.ca)
Ministry of Labour, Immigration, Training and Skills Development	Ministry of Labour, Immigration, Training and Skills Development | ontario.ca
Exam Preparation Guide	Exam Resources – Skilled Trades Ontario
Skills Zone (Ontario Skills Passport)	http://www.skillszone.ca/

**Please note, all website addresses are current at time of printing*

Methodology-Standard Development

A standard is developed with a broad group of trade representatives who form the initial working group. This includes subject matter experts/ tradespeople/ instructors and employers from a cross section of the sector/industry, with varying years of work experience in the field. The working group reviews, develops and recommends revision to the content of the standard. Their role also involves harmonizing and updating other supporting content for the product.

An essential part of the standard development is the validation process. This is the opportunity to have a broader representation of the sector provide feedback on the content of draft standard. This process is conducted in various ways and may include sending out a survey or the draft document (or both) directly to the sector. The comments received are reviewed by the working group and revisions are made as required based on a consensus model.

Introduction to the Logbook

This “on-the job” Logbook is the training standard for Instrumentation and Control Technician 447A and was developed by Skilled Trades Ontario in consultation with representatives from industry. It identifies all the skills associated with and required to learn the trade.

The Logbook is divided into skill sets, which are further divided into skills. These skill sets and skills are written in statements that describe what the Apprentice must perform and to what standard, in order to be considered competent in that skill.

The successful performance of these skills is tracked in the Logbook. Once achieved, this skills’ sign-off, along with the completion of in-school program requirements or equivalent, is how the apprenticeship program is completed and apprentices receive a Certificate of Apprenticeship.

The Sponsor/trainer and Apprentice are required to sign-off and date each skill after the Apprentice has demonstrated proficiency in these skills. However, if a skill is shaded, it is optional and does not need to be signed-off, though it has been defined as a part of the scope of practice for the trade.

All practices described in this standard must be performed by the apprentice according to the specific criteria identified. In general, the standard of performance for this trade is to be performed according to all applicable jurisdictional codes and standards and all health and safety standards must be respected and observed.

All skills within the Apprenticeship Training Standard are to be performed, as applicable, according to and in compliance with the following:

- Occupational Health and Safety Legislation and Regulations;
- Other applicable legislation, regulation, codes and standards;
- Industry best practices;
- Company policies and procedures.

The information presented in this standard is, to the best of our knowledge, current at time of printing and is intended for general application. Please refer to the Skilled Trades Ontario website for the most accurate and up-to-date information: skilledtradesontario.ca

Roles and Responsibilities

Under the *Building Opportunities in the Skilled Trades Act, 2021* (BOSTA)

Skilled Trades Ontario (STO) is responsible for:

- Establishing and maintaining qualifications;
- Establishing Apprenticeship Programs and other training programs including training Standards, curriculum standards and certifying examinations;
- Issuing certificates for the purposes of this Act such as Certificates of Qualification;
- Maintaining a Public Registry for compulsory trades skilledtradesontario.ca/public-register/;
- Determining whether the experience and qualifications obtained by applicants for a certificate of qualification who do not complete an apprenticeship are equivalent to those received through completing an apprenticeship (Trade Equivalency Assessments)
- Promoting the skilled trades and conducting research.
- Conducting research and evaluate whether a trade should be prescribed as a trade for the purposes of this Act and to make recommendations on these matters to the Minister.

Ministry of Labour, Immigration, Training and Skills Development (MLITSD) is responsible for:

- Classifying trades as compulsory trades;
- Prescribing scopes of practice for trades;
- Approving which persons may provide in-class training for apprenticeship programs (TDAs);
- Registering Training Agreements;
- Providing those who successfully complete an apprenticeship program with a certificate of apprenticeship (CofA);
- Administering examinations, including certifying examinations;
- Promoting the skilled trades and conducting research;
- Exercising such other powers and perform such other duties and functions as are provided for in this Act or the regulations.

For any matter related to your registered Training Agreement or completing your apprenticeship, you must contact your local Service Delivery Office.

Roles and Responsibilities of the Apprentice

An Apprentice is an individual who has entered into a registered Training Agreement (refer to Foreword: *"Purpose, Terms and Conditions of TA" page 1)* with a Sponsor to receive training in a trade as part of an apprenticeship program established by Skilled Trades Ontario. As an Apprentice, you have certain roles and responsibilities to follow throughout your apprenticeship training:

1. As an Apprentice, you signed the Training Agreement and have entered into a contract with the Ministry of Labour, Immigration, Training and Skills Development and your Sponsor.
2. If you are registered as an Apprentice in a compulsory trade, your name will automatically appear in the Skilled Trades Ontario Public Register.
3. You are responsible for informing the staff at your local Service Delivery Office regarding changes to the following:
    - Your Sponsor's address;
    - Your name and address; and/or,
    - Your Sponsor, including starting employment with a new Sponsor
4. As an Apprentice, you are responsible for completing skills or skill sets in this Logbook (as detailed in the *"Eligibility for Apprenticeship Program Completion"* section of this document) and ensuring that they are dated and signed by both you and your Trainer.
5. Once you have demonstrated competency in all the mandatory skills and received a sign off on each skill by your sponsor/trainer, you must have the Skill Set Completion Form completed and signed by your current Sponsor.
6. Submit your Logbook to your local Service Delivery Office.
7. Present your Apprentice Completion Form (Please refer to Appendix B), along with your authorized Logbook to your local Service Delivery Office.

Roles and Responsibilities of Sponsors and Trainers

Sponsors are responsible for ensuring all terms are met as per the registered Training Agreement. They are named on the registered Training Agreement as the entity responsible for ensuring Apprentices receive the training required as part of an apprenticeship program. As a signatory to this agreement, they are designated as the 'Signing Authority' for the Apprentice's Skill Set Completion Form and are required to attest to successful achievement by signing the appropriate box at the completion of each skill set. Some sponsors may also act as the Trainer.

A **Trainer** is an individual who oversees the performance of a task and sets the workplace expectations and practices for the Apprentice.

In compulsory trades, a Trainer must hold a valid Certificate of Qualification and be registered with Skilled Trades Ontario.

In non-compulsory trades, a Trainer is an individual who holds one of the following:

- A Certificate of Qualification;
- A Certificate of Apprenticeship in the trade; or,
- Has completed both the workplace-based training (competencies and/or hours as applicable) and classroom training components of the trade's apprenticeship program; or,
- Has workplace experience equivalent to the apprenticeship program) and has the skills outlined in the Logbook.

Competency means being able to perform to the required standard (please refer to *"Introduction to the Logbook").* Trainers/Sponsors and Apprentices are required to sign-off and date the skills in the Logbook following each successful acquisition. The Logbook forms a record of this achievement.

The Trainer must provide their signature based on their assessment and professional judgment that the apprentice is competent in the skills described above. The Trainer's signature is not a general warranty or guarantee of the apprentice's future conduct.

Sponsors participating in this training program will be designated as the Signing Authority and are required to attest to successful achievement by signing the appropriate box included at the end of each skill set.

Health and Safety

Safe working procedures and conditions, accident prevention and the preservation of health are of primary importance for apprenticeship programs in Ontario. These responsibilities are shared and require the joint efforts of government, sponsors, employers, supervisors, workers, apprentices and the public to achieve the goal of making Ontario's workplaces safe and healthy.

The Occupational Health and Safety Act (OHSA) provides us with the legal framework and the tools to do this. It sets out the rights and duties of all parties in the workplace, placing ultimate responsibility on the employer for the health and safety of workers (in this case apprentices) by ensuring procedures, controls, and training are established for dealing with workplace hazards. Therefore, it is imperative that all parties become aware of circumstances that may lead to injury, illness or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to or cause an accident injury or illness.

A sponsor who is not the employer is reminded that the employer has legal responsibilities respecting health and safety over the apprentice who is their worker. The sponsor should encourage safe work habits and adherence to the employer's occupational health and safety requirements for the workplace.

It is generally recognized that a positive attitude about safety in partnership with health and safety competency contributes to an accident-free environment. Everyone will benefit as a result of a healthy attitude towards the prevention of accidents.

Workers and apprentices can be exposed to a multitude of hazards and, therefore, should be familiar with the Occupational Health and Safety Act and regulations.

The Internal Responsibility System:

One of the primary purposes of the Occupational Health and Safety Act (OHSA) is to facilitate a strong Internal Responsibility System (IRS) in the workplace. To this end, the OHSA lays out the duties of employers, supervisors, workers, apprentices, constructors and workplace owners.

Workplace parties' compliance with their respective statutory duties is essential to the establishment of a strong IRS in the workplace.

Simply put, the IRS means that everyone in the workplace has a role to play in keeping workplaces safe and healthy. Workers and apprentices in the workplace who see a health and safety problem such as a hazard or contravention of the OHSA in the workplace have a statutory duty to report the situation to the employer or a supervisor. Employers and supervisors are, in turn, required to address those situations and acquaint workers with any hazard in the work that they do.

The IRS helps support a safe and healthy workplace. In addition to the workplace parties' compliance with their legal duties, the IRS is further supported by well-defined health and safety policies and programs, including the design, control, monitoring and supervision of the work being performed.

Roles and Responsibilities under the Occupational Health and Safety Act

Employer's Responsibilities include but are not limited to the following:

- Instruct, inform and supervise workers and apprentices to protect their health and safety.
- Appoint competent persons as supervisors.
- Inform a worker, apprentice, or a person in authority, about any hazard in the workplace and train them in the handling, storage, use, disposal and transport of any equipment, substances, tools, material, etc.
- Take every precaution reasonable in the circumstances for the protection of a worker/apprentice.
- In workplaces in which more than five workers are regularly employed, prepare and post a written occupational health and safety policy and set up and maintain a program to implement it.
- Prepare and post policies with respect to workplace violence and workplace harassment and develop programs supporting workplace harassment and workplace violence policies.
- Ensure knowledge of applicable legislative, regulatory, codes and standards so requirements to be followed are clear to all workers/apprentices.

Trainer/Supervisor Responsibilities include but are not limited to the following:

- Ensure that a worker or apprentice works in compliance with the Act and regulations.
- Ensure that any equipment, protective device or clothing required by the employer is used or worn by the worker or apprentice.
- Advise a worker/apprentice of any potential or actual health or safety dangers known by the supervisor.
- Take every precaution reasonable in the circumstances for the protection of workers.

Worker/Apprentice Responsibilities include but are not limited to the following:

- Work in compliance with the Act and regulations.
- Use or wear any equipment, protective devices or clothing required by the employer.
- Report to the employer or supervisor any known missing or defective equipment or protective device that may endanger the worker or another worker.
- Report any hazard or contravention of the Act or regulations to the employer or supervisor.
- Not remove or make ineffective any protective device required by the employer or by the regulations.
- Not use or operate any equipment or work in a way that may endanger any worker.

The Three Rights of Workers/Apprentices

The OHSA gives workers and apprentices three important rights:

1. The right to know about hazards in their work and get information, supervision and instruction to protect their health and safety on the job.
2. The right to participate in identifying and solving workplace health and safety problems either through a health and safety representative or a worker member of a joint health and safety committee.
3. The right to refuse work that they believe is dangerous to their health and safety or that of any other worker in the workplace.

Ministry of Labour, Immigration, Training and Skills Development

The Ministry of Labour, Immigration, Training and Skills Development conducts periodic inspections of workplaces to ensure that safety acts and regulations are being followed. Please direct any questions to the Occupational Health and Safety Contact Centre at 1-877-202-0008.

Apprenticeship Program Summary/Guidelines

Scope of Practice

The Scope of Practice for the trade of Instrumentation and Control Technician is set out in section 80 of Ontario Regulation 875/21 under BOSTA and reads as follows:

80. The scope of practice for the trade of instrumentation and control technician includes installing, calibrating, configuring, maintaining, servicing, testing, troubleshooting, analyzing and upgrading measuring and control devices and systems, which equip process industries, by doing the following:

1. Working with instruments such as transmitters, sensors, detectors, signal conditioners, recorders, controllers and final control elements, including various types of auto valves and variable frequency drives.
2. Practising within all areas of industry to measure, record, research, analyze and control product output, as well as monitoring and controlling emissions to protect the environment.
3. Installing, calibrating, maintaining, servicing and troubleshooting, analyzing and upgrading measuring and control devices and systems, including the areas of distributed control systems, programmable logic controllers, supervisory control and data acquisition systems and other high-tech systems.
4. Servicing analytical instrumentation such as gas chromatography and gas detection and monitoring and analyzing instruments.
5. Servicing microprocessing instruments, including fieldbus systems and wireless communications.

*While the Logbook draws on the scope of practice regulation (Section 80 of Ontario Regulation 875/21 under BOSTA). The Logbook does not purport to add to or modify the scope of practice as provided in regulation. *

Program Guidelines

On-the-Job Training Duration

Industry has identified 7280 hours as the benchmark necessary for any Apprentice to become competent in the skills required. There may be circumstances in which the duration varies from this guideline.

In-Class Training Duration

Industry has identified 720 hours of in-school training as the duration necessary for an Apprentice to complete the in-school curriculum for this program.

Total Training Hours

8000 hours

Journeyperson to Apprentice Ratio

Industry Recommended Ratios: While some of the trades regulated under BOSTA are subject to Journeyperson to Apprentice ratios set out in regulation, this trade is not one of them. Instead, **industry has recommended a Journeyperson to Apprentice ratio guideline of 1 Journeyperson (or individual who is deemed equivalent to a journeyperson)** to 1 Apprentice as the ratio necessary for an Apprentice to be properly trained on the job in this program.

Program Requirements

Compulsory and Non-compulsory Classification

Regulations under the *Building Opportunities in the Skilled Trades Act, 2021,* classify each trade as either “compulsory” or non-compulsory.” This trade is non-compulsory.

It is the responsibility of an Apprentice to maintain a training record in the form of a Logbook. The Sponsor and Trainer are required to sign-off when competencies in the trade are achieved.

Skills for Success Summary

Skills for Success are needed in a quickly changing world for work, learning and life. They are foundational for building other skills and important for effective social interaction. Everyone benefits from having these skills as they help individuals get a job, progress at their current job and change jobs. They also help individuals become active members of their community and succeed in learning.

Through extensive research and consultations, the Government of Canada launched the new Skills for Success model renewing the previous Essential Skills framework to better reflect the needs of the current and future labour market.

The occupational specific Essential Skills profiles are available online. These will be updated over time to align with the new Skills for Success model found here: Skills for Success model

Standard of Performance

In general, the standard of performance for the trade of Instrumentation and Control Technician are to be performed, as applicable, according to and in compliance with the following:

Industry Safety Standards which are based upon:

- Occupational Health and Safety Legislation and Regulations;
- Jurisdictional legislation and regulations, codes and standards (municipal bylaws etc.)
- Company policies and procedures
- All applicable manufacturers specifications and engineering specifications

Other Required Certification(s) (if applicable)

A certification issued by the Technical Standards and Safety Authority as an Industrial Maintenance Technician (IMT) or Gas Fitter (G2) is needed to work on devices connected to pressurized gas lines.

Training the Apprentice - Tips for Apprentices, Sponsors and Trainers

Tips for Apprentices

Remember, it takes time to learn. The following is a list of additional tips and tools to help make the most of your apprenticeship training:

- Practice safe work procedures early to create good habits;
- Use your Logbook as a journal to keep track of the skills you have achieved;
- Review your training plan with your Training Consultant, Trainer, or Sponsor;
- Discuss your training needs with your Trainer and/or Sponsor;
- Listen to the suggestions of your Trainer;
- Ask your Trainer questions if you are unsure of any skill you need to perform or any tools or equipment you need to use to perform your duties;
- Show enthusiasm and develop good work habits; and,
- Upon demonstration of competency, ensure that you and your Trainer sign-off the individual skills.

To get the most from this mentoring experience, request exposure to the full scope of the trade; meet regularly with your Sponsor/Trainer to discuss your progress, ask questions and seek feedback.

Tips for Sponsors

- Select Trainers with good communication skills and who work well with others;
- Ensure that the Apprentice always works under the direction of or has access to a qualified Trainer;
- Encourage Trainers to take upgrading courses (e.g. Train the Trainer, Mentor, Coach, etc.);
- Set out clear expectations and involve both the Apprentice and Trainer in developing the training plan
- Encourage safe work habits;
- Allow time for the Trainer to train and demonstrate skills to the Apprentice;
- Provide opportunities and time for the Apprentice to learn the trade;
- Ensure that the Apprentice receives the varied on-the-job trade training experience outlined in this document;
- Recognize good performance;
- Observe frequently;
- Provide constructive feedback and conduct regular performance reviews involving the Apprentice and Trainer;
- Use the Logbook as a monitoring tool and a part of regular performance evaluations; and,
- Complete the Skill Set Completion Form once the Apprentice has demonstrated competency in the skills.

- The detailed content listed for each skill is not intended to represent an inclusive list; rather, it is included to illustrate the intended direction for the skill acquisition.

Tips for Trainers

Trainers are responsible for ensuring the Apprentice is developing the skills outlined in this document. Here is a list of tips and tools to help Trainers in their supervision of Apprentices:

- Demonstrate model safe work habits;
- Provide opportunities and time for the Apprentice to learn the trade;
- Treat Apprentices fairly and with respect;
- Review the Logbook with the Apprentice and develop a training plan;
- Set out clear expectations and recognize good performance;
- Expose Apprentices to the full scope of the trade by providing training on the skills outlined in this document;
- Encourage and respond to all questions;
- Be patient;
- Explain, show and demonstrate the skill;
- **Meet regularly with the Apprentice to discuss the apprentice's progress**
- Provide continuous feedback;
- Sign-off skills when your Apprentice demonstrates competency, and,
- Use the Logbook as a guide to evaluate competence in each skill area. By using the Logbook, Trainers will be able to guide the process to and assist Apprentices to develop skills outlined in this document.

The best mentoring experience is when an Apprentice is given as much training/exposure to the full scope of the trade as possible. If this is not possible, help them to determine other ways this may be possible.

Notice of Collection of Personal Information

1. At any time during your apprenticeship training, you may be required to show this Logbook to the local Service Delivery Office. You will be required to submit the signed Apprenticeship Completion form to the Service Delivery Office in order to complete your program. The Service Delivery Office will use your personal information to administer and finance Ontario's apprenticeship training system, including confirming your completion and issuing your Certificate of Apprenticeship.

2. The Service Delivery Office will disclose information about your program completion and your Certificate of Apprenticeship to Skilled Trades Ontario, as it is necessary for Skilled Trades Ontario to carry out its responsibilities.

3. Your personal information is collected, used and disclosed by the Ministry of Labour, Immigration, Training and Skills Development under the authority of the *Building Opportunities in the Skilled Trades Act, 2021 (BOSTA).*

4. Questions about the collection, use and disclosure of your personal information by the Ministry may be addressed to the:

   Manager, Employment Ontario Contact Centre
   Ministry of Labour, Immigration, Training and Skills Development
   33 Bloor St. E, 2nd floor, Toronto, Ontario M7A 2S3
   Toll-free: 1-800-387-5656; Toronto: 416-326-5656
   TTY: 1-866-533-6339 or 416-325-4084

List of Trainers

Trainer's Name (Please Print)	Trainer's Signature	Date of start with Trainer (day/month/year)

U6551 Safe Working Practices and Procedures

General Performance Objective

Demonstrate safe working practices and procedures by working nearby workplace health and safety hazards; handling workplace hazardous materials; following procedures for handling worksite waste; complying with federal, provincial or municipal workplace legislation and regulations; using personal protective equipment; practicing good housekeeping in the workplace; shutting down equipment; following fire safety procedures; identifying the impact of environmental and atmospheric extremes; and working nearby energy sources.

Skills

U6551.01 **Work nearby workplace health and safety hazards** including but not limited to noxious fumes and dust, high-intensity light, fires, radiation, X-rays, Radio Frequencies (RF), elevated worksites, suspended loads, poor lighting, extreme temperatures, inadequate ventilation, confined spaces, untidy worksites and uncontrolled powers sources by identifying hazards, taking corrective actions, documenting and posting hazardous conditions so that the potential for person injury and damage to equipment, facilities and environment are prevented in accordance with applicable manufacturers' specifications, safety legislation and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** A Trainer may be a Supervisor or the competent employee designated by the Apprentice's Sponsor.**

U6551.02 **Handle workplace hazardous materials** including but not limited to lead, mercury, gases, acids, caustics and solvents, calibration standards (chemicals) by wearing personal protective equipment, disposing and storing hazardous materials and preventing toxic spills/emissions, so that individuals are protected from injury, the environment from contamination and safety practices are followed in accordance with Workplace Hazardous Materials Information System (WHMIS) guidelines, safety legislation, manufacturers' specifications and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.03 **Follow procedures for handling worksite waste** by wearing personal protective equipment, disposing and storing hazardous materials, and preventing toxic spills/emissions so that individuals are protected from injury, the environment from contamination and safety practices are followed, so that waste is recycled, reduced and reused in accordance with safety and environmental legislation, manufacturers' specifications and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.04 **Comply with federal, provincial, or municipal workplace legislation and regulations** including but not limited to Environmental Protection Act (EPA), Occupational Health and Safety Act (OHSA), Workplace Safety Insurance Act (WSIA), Ontario Electrical Safety Code (OESC), Provincial and Municipal Building Codes, Dangerous Goods Transportation Act (DGTA), Workplace Hazardous Materials Information System (WHMIS), the Ontario Fire Code (OFC), Canadian Standard Association (CSA), Training Standards and Safety Authority (TSSA) so that all worksite-specific work is completed safely and effectively.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.05 **Use Personal Protective Equipment (PPE)** including but not limited to eye, ear, hand, respiratory, body and foot protection by ensuring that a correct fit and optimum protection is provided to the wearer for the specific task in accordance with applicable safety legislation, government regulations, manufacturers' specifications and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.06 **Practice good housekeeping in the workplace** by ensuring that the workplace is clean, organized and free of obstructions, spills, or fire hazard and that materials and equipment are cleaned and stored in designated areas after use, and that protective barriers, UV shields and guards are erected so that accident or injury potential is prevented in accordance with safety legislation and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.07 **Shut down equipment** including electrical, mechanical, hydraulic or pneumatic and nuclear equipment by locking and tagging, and de-energizing procedures before commencing job in accordance with the Ontario Electrical Code, safety legislation, manufacturers' specifications and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.08 **Follow fire safety procedures** including but not limited to determining the potential for fire posed by the work being performed; locating and assessing the severity of the fire; selecting and operating fire extinguishing equipment; suppressing minor fires; activating alarms; following fire evacuation plans and reporting incidents in accordance with applicable Acts, Regulations, Legislation and Codes, manufacturers' specifications and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.09 **Identify the impact of environmental and atmospheric extremes** including but not limited to wind, temperature, humidity, UV, sound or precipitation on job functions to ensure personal safety.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6551.10 **Work nearby energy sources** by observing limits and procedures for approaching energy sources to ensure personal safety and protection of equipment in accordance with safety legislation, applicable Acts, Regulations, Legislation and Codes, and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552 Occupational Skills

General Performance Objective

Perform occupational skills by selecting, inspecting, using and maintaining hand tools, portable and stationary power tools; maintaining calibration, configuration or testing equipment; interpreting schematics and drawings; using job documentation and specialized computer equipment and software; installing mounting hardware and process connections; and operating material handling equipment.

Skills

U6552.01 **Select, inspect, use and maintain hand tools** including but not limited to:

- hammers, wrenches, screwdrivers, pliers, drills, saws, files, tube benders, tap and die sets, wire crimpers, cutters, strippers and reamers; ensuring that the selected hand tools are the correct ones for the application and ready for use to install, service, or maintain instrument and control systems, in accordance with work order, manufacturers' specifications, company standards/procedures and applicable Acts, Regulations, Legislation and Codes.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

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U6552.02 **Select, inspect, use and maintain portable and stationary power tools** including but not limited to:

- saws, drill presses, grinders, high pressure tools, pipe threaders, portable drills, portable generators, vacuum pumps;

ensuring that the selected power tools are the correct ones for the application and ready for use, install, service or maintain instrument and control systems, in accordance with work order, manufacturer's specifications, company standards/procedures and applicable Acts, Regulations, Legislation and Codes.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552.03 **Maintain calibration, configuration or test equipment** by:

- selecting equipment including but not limited to manometers, process calibrators, multimeters, simulators, analyzers, function generators, deadweight testers and handheld communicators;
- inspecting or testing equipment;
- verifying functionality of equipment;
- confirming versions and performing updates of software and firmware;
- identifying calibration procedures;
- storing calibration, configuration and test equipment;
- completing documentation;

so that the equipment is maintained and ready for use, in accordance with work order, manufacturer's specifications, company standards/procedures and applicable Acts, Regulations, Legislations and Codes.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552.04 **Interpret schematics and drawings** including but not limited to pipe drawings, wiring diagrams, process and instrumentation drawings (P&ID), loop sheets, CAD drawings and specification sheets to identify:

- logical sequence;
- components and parts;
- location of equipment;
- full set of documentation;
- revision level and process;

so that information is obtained for the job, in accordance with ISA (Instrumentation Systems and Automation Society standards) or company standards/procedures.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552.05 **Use job documentation** including but not limited to calibration documents, data sheets, manufacturers' or job specifications, maintenance practices and schedules, or work orders to identify:

- work to be performed;
- required materials and equipment;
- work schedules;
- isolation and safety procedures;
- environmental protocols;
- International Society of Automation (ISA) standards;
- hazardous area classifications;
- required permits;
- disposal and recycling procedures;

so that job can be completed in accordance with company standards/procedures and applicable Acts, Regulations, Legislation and Codes.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552.06 **Install mounting hardware** by:

- determining location for installation;
- selecting mounting hardware including but not limited to channels, supports, stands, clamps, brackets, u-bolts, adapters and enclosures;
- using hand, power, or stationary tools;
- modifying, fabricating or fastening mounting hardware;

so that hardware is installed in accordance with manufacturers' and job specifications, drawings, schematics, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552.07 **Install process connections** by:

- identifying system requirements;
- selecting process connections including but not limited to welded, threaded, or surface-mounted fittings, instrumentation wiring, tubing, and fibre-optic cable;
- identifying limitations of piping and tubing;
- fabricating by cutting, bending and flaring tubing;
- applying adhesives, sealants, and gaskets;
- using required tools;
- connecting to the process;

so that process connections are positioned and installed in accordance with manufacturers' and job specifications, drawings, schematics, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552.08 **Use specialized computer equipment and software** by:

- selecting applicable diagnostic or configuration software;
- identifying required configuration licensing;
- using software including but not limited to spreadsheets, databases, and word processors;
- using interfaces including but not limited to communication devices and computer equipment;
- updating software and firmware;
- backing-up data and equipment configurations;

so that controls, instruments, equipment and systems can be calibrated, configured and tested in accordance with manufacturers' specifications and company standards/procedures.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6552.09 **Operate material handling equipment** by:

- determining approximate weight of lift;
- identifying capacity of equipment;
- identifying type of lift and weight of workpiece;
- selecting handling equipment including but not limited to jacks, hoists, come-along, belts, ropes, cables, slings, pallet jacks, forklifts, or stationary cranes;
- inspecting equipment for defects and expiration dates;
- identifying potential hazards including but not limited to pinch points, load instability, obstructions, and overhead lines;
- identifying regulatory and workplace limitations to determine what rigging and hoisting operations need to be done by other qualified personnel;

so that materials, parts and equipment are moved and stored in accordance with manufacturers' and job specifications, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553 Process Measurement and Indicating Devices

General Performance Objective

Work with process measurement and indicating devices by installing, troubleshooting and performing preventative maintenance on pressure, temperature, level or flow measuring and indicating devices; motion, speed, position or vibration measuring and indicating devices; mass, density or consistency measuring and indicating devices.

Skills

U6553.01 Install pressure, temperature, level or flow measuring and indicating devices by:

- selecting required devices including but not limited to pressure gauges, manometers, electronic and pneumatic pressure transmitters, pressure switches, thermometers, thermostats, thermocouples, Resistance Temperature Detector (RTDs), pyrometers, temperature switches, sight glasses, mechanical level indicators, pneumatic/electronic level measuring devices, level switches, primary elements (annubars, orifice plates, venturi tubes, pitot tubes, flow nozzles, flumes, weirs) , and flowmeters (magnetic, electronic, mechanical);
- using installation tools and equipment;
- determining locations and methodology for devices;
- modifying holding enclosures and panels;
- fastening or bracketing to secure devices;
- applying sealants and gaskets;
- connecting device to the control system or indicator;
- configuring or calibrating devices;
- verifying operation;
- completing and updating documentation;

so that devices are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** A Trainer may be a Supervisor or the competent employee designated by the Apprentice's Sponsor.**

U6553.02 **Troubleshoot pressure, temperature, level or flow measuring or indicating devices** by:

- using tools and equipment;
- diagnosing source of problem;
- using specialized computer equipment and software;
- isolating device and performing safety procedures;
- clearing out obstructions/debris from sensing or impulse lines;
- cleaning the device;
- repairing/rebuilding defective devices;
- replacing consumables, parts or device;
- making required adjustments;
- calibrating or configuring using multimeters, temperature baths, hand-held calibrators, signal generators, calibration software and dead weight testers;
- performing a completion test to confirm operation;
- returning to operational service;
- completing and updating documentation;

so that devices are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553.03 **Perform preventative maintenance on pressure, temperature, level or flow measuring or indicating devices** by:

- interpreting job documentation;
- inspecting the devices;
- using tools and equipment;
- verifying functionality;
- isolating device and performing safety procedures;
- cleaning;
- clearing out obstructions/debris from device and primary element;
- replacing out-of-specification device or components including but not limited to seals, electronic parts, springs, or mechanical devices;
- repairing/rebuilding devices;
- verifying calibration;
- returning to operational service;
- performing a completion test to confirm operation;
- completing and updating documentation;

so that devices are maintained in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553.04 **Install motion, speed, position or vibration measuring or indicating devices** by:

- using installation tools and equipment;
- selecting devices including but not limited to torque switches, proximity switches, proximity probes, analog position sensors, tachometers, strobes, proximeters, chart recorders, digital displays, and gauges;
- determining locations for devices;
- performing safety procedures;
- fastening or bracketing to secure devices;
- applying sealants and gaskets;
- connecting device to the control system or indicator;

- configuring or calibrating devices;
- verifying operation;
- completing and updating documentation;

so that devices are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553.05 Troubleshoot motion, speed, position or vibration measuring or indicating devices by:

- using required tools and equipment;
- diagnosing source of problem;
- using specialized computer equipment and software;
- isolating device and performing safety procedures;
- cleaning and remove obstruction/debris from the devices;
- testing device and recording results;
- repairing or replacing out-of-specification components including but not limited to proximity switches and probes;
- repairing defective connections;
- calibrating or configuring using strobe lights, multimeters, tachometers, micrometers, feeler gauges, or calibration software;
- performing a completion test to confirm operation;
- returning to operational service;
- completing and updating documentation;

so that devices are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553.06 **Perform preventative maintenance on motion, speed, position, or vibration measuring or indicating devices** by:

- interpreting job documentation;
- inspecting the devices;
- using required tools and equipment;
- verifying functionality;
- isolating device and performing safety procedures;
- cleaning probe faces, reflectors, optical lenses or fire-eyes;
- repairing defective connections;
- replacing out-of-specification components including but not limited to switches and probes;
- calibrating or configuring using strobe lights, multimeters, tachometers, micrometers, feeler gauges, or calibration software;
- returning to operational service;
- performing a completion test to confirm operation;
- completing and updating documentation;

so that devices are maintained in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553.07 **Install mass, density, or consistency measuring or indicating devices** by:

- selecting devices including but not limited to load cells, scales, strain gauges, u-tube, displacer, nuclear gauges, refractometer, consistency transmitters, chart recorders, digital displays, gauges and display monitors;
- determining location for devices;
- performing safety procedures;
- using required tools and equipment;
- selecting connections for piping and wiring;
- modifying enclosures and panels;
- fastening or bracketing to secure devices;
- applying sealants and gaskets;
- configuring devices;
- calibrating devices;
- verifying operation;
- completing and updating documentation;

so that devices are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553.08 **Troubleshoot mass, density or consistency measuring and indicating devices** by:

- using required tools and equipment;
- diagnosing source of problem;
- isolating device and performing safety procedures;
- using specialized computer equipment and software;
- testing device and recording results;
- replacing out-of-specification components including but not limited to load cells, strain gauges, and bearings;
- identifying hazards of working with nuclear measuring devices;

- repairing defective connections;
- calibrating or configuring using handheld calibrators, Geiger counters, calibrated standards, or calibration software;
- performing completion tests to confirm operation;
- returning to operational service;
- completing and updating documentation;

so that devices are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6553.09 **Perform preventative maintenance on mass, density or consistency measuring and indicating devices** by:

- interpreting job documentation;
- inspecting the devices;
- using required tools and equipment;
- verifying functionality;
- isolating device and performing safety procedures;
- identifying hazards of working with nuclear measuring devices;
- cleaning;
- repairing defective connections;
- rebuilding devices;
- replacing out-of-specification components including but not limited to load cells, strain gauges, or bearings;
- calibrating or configuring using strobe lights, multimeters, tachometers, micrometers, feeler gauges, or calibration software;
- returning to operational service;
- performing post-maintenance tests;
- completing and updating documentation;

so that devices are maintained in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6554 Process, Quality Control and Environmental Analyzers

General Performance Objective

Work with process measurement and indicating devices by installing, troubleshooting, performing preventative maintenance and calibrating process, quality control and environmental emission analyzers.

Skills

U6554.01 Install process analyzers by:

- identifying environmental conditions including but not limited to extreme ambient temperature, cleanliness, and contamination;
- selecting quality control analyzers including but not limited to oil and gas (chromatographs and spectrometers);
- selecting environmental emission analyzer including but not limited to noise, hazardous gases (CO, H2S, NH3), or greenhouse gases;
- identify process analyzers including but not limited pH, conductivity, turbidity, or oxidation reduction potential (ORP) and chemical analyzers;
- identifying sampling systems, conditions and methods;
- determining locations for analyzers;
- using tools and equipment including but not limited mounting jigs and calibration standards;
- fastening or bracketing to secure devices;
- applying sealants and gaskets;
- connecting analyzer to the control system or indicator;
- configuring analyzers;
- calibrating analyzers;
- verifying operation;
- completing updating documentation;

so that process analyzers are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

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U6554.02 **Troubleshoot process, quality control and environmental emission analyzers** by:

- diagnosing source of problem;
- isolating analyzer and performing safety procedures;
- removing, cleaning, or replacing components including but not limited to filters, conditioners, solenoids, valves, tubing, chillers, and sampling system components;
- clearing and flushing sample lines;
- determining and preparing a reference standard;
- connecting calibration equipment to analyzer;
- connecting sample devices and carrier gases;
- calibrating analyzers using multimeters, calibrated standard, water, oil, analyzer device, handheld calibrators, or calibration software;
- storing sampling and calibration materials;
- returning to operational service;
- completing and updating documentation;

so that analyzers are operational and functioning in accordance with manufacturers' specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6554.03 **Perform preventative maintenance on process, quality control and environmental emission analyzers** by:

- interpreting job documentation;
- inspecting the analyzers;
- isolating analyzer and performing safety procedures;
- using required materials, carrier gases, calibrated standards, tools and equipment;
- determining and preparing a reference standard;
- configuring using software and handheld devices;
- removing, cleaning or replacing analyzer components;
- verifying functionality;
- returning to operational service;
- completing and updating documentation;

so that analyzers are maintained in accordance with manufacturers' specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6554.04 **Calibrate process, quality control and environmental emission analyzers** by:

- identifying type and function of the analyzer;
- obtaining calibration procedures and materials;
- obtaining calibration standards, limitations and parameters;
- determining and preparing a reference standard;
- isolating analyzer and performing safety procedures;
- connecting calibration equipment to analyzer;
- connecting sample devices;
- calibrating analyzers using multimeters, calibration standard, analyzer device, handheld calibrators or calibration software;
- interpreting results;
- returning to operational service;
- completing and updating documentation;

so that analyzers are calibrated in accordance with manufacturers' specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6555 Safety and Security Systems and Devices

General Performance Objective

Work with safety and security systems by installing, troubleshooting, performing preventative maintenance on safety and security systems.

Skills

U6555.01 **Install safety systems** by:

- identifying environmental conditions;
- selecting safety systems including but not limited to gas (infrared and catalytic bead), flame (ultraviolet and infrared), heat (thermal pencils and heat sensors), smoke (ionic and particle detectors) and spill detection;
- identifying operational parameters and acceptable limits;
- determining locations for devices;
- using required tools, equipment and technology;
- fastening or bracketing to secure devices;
- applying sealants and gaskets;
- connecting safety systems to the control system or indicator;
- configuring safety system using specialized equipment and software;
- verifying alarming method such as stench gas, flashing lights, or audible alarms;

so that safety systems are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

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U6555.02 **Install security systems** by:

- identifying installation conditions;
- selecting security including but not limited to intruder alarms, remote monitoring, cameras, motion sensors or access systems;
- identifying operational parameters and acceptable limits;
- determining locations for devices;
- using required tools, equipment and technology;
- fastening or bracketing to secure devices;
- applying sealants and gaskets;
- connecting security systems to the control system or indicator;
- configuring security system using specialized equipment and software;

so that security systems are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6555.03 **Install Service Safety Instrumented Systems (SISs)** by:

- identifying installation conditions;
- selecting SISs including but not limited to controller and input/output (I/O) devices;
- labeling SIS components clearly due to importance of dedicated purpose;
- verifying accuracy and operation of SIS components according to specifications;
- selecting mounting hardware for the system and components according to manufacturers' specifications and engineered designs;
- verifying and determining the location of SIS components to ensure process can be brought to a safe state;
- positioning and mounting SIS components independently from process control components;
- selecting and using required tools, equipment and technology including but not limited to stop watches and high accuracy pressure calibrators;
- verifying the operation of SISs and components within specified parameters by using test equipment, documentation and established procedures;
- configuring SISs system using specialized equipment and software;
- backing-up and documenting configuration settings for future data recovery and notify appropriate personnel;

so that SISs systems are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6555.04 **Troubleshoot safety, security and SISs systems** by:

- using required tools, equipment and technology
- assessing system reaction to alarms;
- diagnosing source of problem;
- isolating systems and performing safety procedures;
- performing functional checks of systems;
- determining systems operational parameters and alarm points;
- removing and replacing system components;
- calibrating system components;
- returning to operational service;
- completing and updating documentation;

so that systems are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6555.05 **Perform preventative maintenance on safety, security and SISs systems** by:

- interpreting job documentation;
- inspecting the devices;
- isolating systems and performing safety procedures;
- using software and handheld devices;
- removing and replacing systems components;
- verifying functionality;
- returning to operational service;
- completing and updating documentation;

so that systems are maintained in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6556 Energy Delivery Systems

General Performance Objective

Work with energy delivery systems by installing, troubleshooting and performing preventative maintenance on pneumatic, electrical, electronic and hydraulic equipment.

Skills

U6556.01 **Install pneumatic equipment** by:

- interpreting job documentation and manufacturers' specifications;
- using required tools and equipment;
- selecting pneumatic equipment according to the application and materials including but not limited to air dryers, conditioning components (filter assemblies, volume boosters, relays), compressors, solenoid valves, regulators, seals, springs, flapper nozzles, links, levers, diaphragms and pistons;
- determining locations for pneumatic equipment;
- fastening or bracketing to secure pneumatic equipment;
- connecting components including but not limited to regulators, separators, or tubing;
- making adjustments;
- verifying operation;
- completing and updating documentation;

so that pneumatic equipment is installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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U6556.02 **Troubleshoot pneumatic equipment** by:

- diagnosing source of problem;
- isolating pneumatics and performing safety procedures;
- using required tools and equipment;
- replacing or repairing defective connections;
- rebuilding pneumatic components;
- cleaning components;
- making adjustments;
- performing a completion test to verify confirm operation;
- returning to operational service;
- completing and updating documentation;

so that pneumatic equipment is operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6556.03 **Perform preventative maintenance on pneumatic equipment** by:

- interpreting job documentation and manufacturers' specifications;
- inspecting the pneumatic equipment;
- using required tools and equipment;
- isolating pneumatics and performing safety procedures;
- removing and replacing components;
- cleaning equipment;
- repairing defective connections;
- returning to operational service;
- performing a completion test to verify confirm operation;
- completing and updating documentation;

so that pneumatic equipment is maintained in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6556.04 **Install electrical and electronic equipment** by:

- interpreting job documentation and manufacturers' specifications;
- using required tools, equipment and technology;
- selecting electrical and electronic equipment including but not limited to power supplies, Uninterruptible Power Supplies (UPS), solenoids, relays, cabling, fuses, resistors, circuit boards and transformers;
- determining locations for electrical and electronic equipment;
- fastening or bracketing to secure equipment;
- connecting equipment to the control system;
- making adjustments to equipment settings;
- completing and updating documentation;

so that electrical and electronic equipment is installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6556.05 **Troubleshoot electrical and electronic equipment** by:

- diagnosing source of problem;
- isolating equipment and performing safety procedures;
- using required tools, equipment and technology
- replacing out-of-specification components including but not limited to circuit boards, power supply, relays, capacitors and fuses;
- repairing defective connections;
- cleaning components;
- making adjustments;
- performing a completion test to confirm operation;
- returning equipment to operational service;
- completing and updating documentation;

so that electrical and electronic equipment is operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

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mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6556.06 **Install hydraulic equipment** by:

- interpreting job documentation and manufacturers' specifications;
- selecting hydraulic equipment including but not limited to hydraulic fluids and filters, controls, valves, lines, pumps, relays and regulators;
- determining locations for hydraulic equipment;
- connecting equipment including but not limited to solenoids, accumulators, servo-valves, motors and pumps to the control system;
- applying seals, gaskets, springs and pistons
- making adjustments to flow and pressure;
- verifying operation of system;

so that hydraulic equipment is installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6556.07 **Troubleshoot hydraulic equipment** by:

- diagnosing source of problem;
- isolating hydraulics and performing safety procedures;
- replacing out-of-specification components including but not limited to seals, gaskets, springs and pistons;
- replacing consumables including but not limited to fluids, filters and strainers;
- repairing defective connections;
- rebuilding hydraulic equipment;
- cleaning components;
- making adjustments to out-of-specification components including but not limited to pressure regulators, relief valves and flow regulators;
- performing a completion test to confirm operation;
- returning to operational service;
- completing and updating documentation;

so that hydraulic equipment is operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6556.08 **Perform preventative maintenance on hydraulic equipment** by:

- interpreting job documentation;
- inspecting the hydraulic equipment;
- using required tools and equipment;
- isolating hydraulics and performing safety procedures;
- removing and replacing components including but not limited to seals, springs, or pistons;
- replacing consumables including but not limited to fluids, filters, and strainers;
- cleaning components;
- repairing defective connections;
- rebuilding hydraulic equipment;
- making adjustments to out-of-specification components including but not limited to pressure regulators, relief valves and flow regulators;
- returning hydraulic equipment to operational service;
- performing a completion test to confirm operation;
- completing and updating documentation;

so that hydraulic equipment is maintained in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6557 Communication Systems and Devices

General Performance Objective

Work with communication systems and devices by demonstrating knowledge of types of signal transmission systems; installing and troubleshooting signal transmission systems; installing, troubleshooting and performing preventative maintenance on signal converters.

Skills

U6557.01 **Demonstrate knowledge of types of signal transmission systems**, including but not limited to:

- networks, signal transmitters, communication protocols and media (RS232, RS422/485, MODBUS, TCP/IP, and Highway Addressable Remote Transducer (HART);
- wiring, connection and tubing methods;
- fibre-optics;
- twisted pair wiring;
- potential causes of interference;
- grounding and shielding methods;
- addressing methods and components;
- programming;

to ensure that system selected is the correct one for the application in accordance with communication protocols, manufacturers' and job specifications, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** A Trainer may be a Supervisor or the competent employee designated by the Apprentice's Sponsor.**

U6557.02 **Install signal transmission systems** by:

- locating wireless transmission and antennas;
- identifying potential causes of interference;
- selecting system components including but not limited to wireless transmission and antennas, panels, modems, fibre-optic cable, tubing, Ethernet switches, software or firmware;
- connecting transmission systems;
- mounting and testing transmission and antennas;
- planning the tubing and wiring runs;
- connecting fibre-optic cabling, wiring, and tubing;
- grounding and shielding methods;
- programming;
- bringing system online;
- completing and updating documentation;

so that signal transmission systems are installed, avoiding interferences with other systems and processes in accordance with communication protocols, manufacturers' and job specifications, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6557.03 **Troubleshoot signal transmission systems** by:

- performing system diagnostics;
- identifying installation problems and deficiencies;
- isolating equipment and performing safety procedures;
- testing system using specialized equipment and software;
- testing wireless signal strength;
- performing upgrading of software and firmware;
- removing and replacing components;
- cleaning components including but not limited to panels, fibre-optic connections and environmental filters;
- clearing, bending, replacing, connecting and torquing tubing and cable connectors lines;
- configuring system using software and hardware;
- returning system to operational service;
- complete and update documentation;

so that the signal transmission system is operational and functioning in accordance with communication protocols, manufacturers' and job specifications, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6557.04 **Install signal converters** by:

- identifying features and limitations of the converters;
- selecting signal converter components including but not limited to digital to analog, analog to digital, current to pneumatic (I/P), pneumatic to electrical, current transformers, potential transformers and voltage to pneumatic, and converter components including but not limited to wiring, tubing, connections, software or firmware;
- connecting converters;
- planning and bending the tubing runs;
- routing and stripping wiring;
- connecting wiring and tubing;
- mounting signal converter components;
- verifying operation;
- completing and updating documentation;

so that the signal converters are installed avoiding interferences with other systems and processes in accordance with communication protocols, manufacturers' and job specifications, company standards/procedures and applicable Acts, Legislation, Codes, and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6557.05 **Troubleshoot signal converters** by:

- performing system diagnostics and making adjustments;
- identifying installation problems and deficiencies;
- isolating equipment and performing safety procedures;
- upgrading software and firmware;
- removing and replacing components;
- clearing tubing lines;
- calibrating signal converters using instruments including but not limited to current and voltage simulators and pneumatic test equipment;
- returning system to operational service;
- completing and updating documentation;

so that signal converter is operational and functioning, in accordance with manufacturers' and job specifications, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6557.06 **Perform preventative maintenance on signal converters** by:

- interpreting job documentation and manufacturers' specifications;
- inspecting converters and connections;
- performing system diagnostics;
- isolating equipment and performing safety procedures;
- upgrading software and firmware;
- removing and replacing components including but not limited to restrictors and air filters;
- clearing, bending, replacing, connecting and torquing, tubing and cable connectors;
- returning signal converters to operational service;
- completing and updating documentation;

so that the signal converter is maintained in accordance with communication protocols, manufacturers' and job specifications, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6558 Final Control Devices

General Performance Objective

Work with final control devices by installing and troubleshooting valves, actuators (pneumatic, electric or hydraulic), positioners and Variable Speed Drives (VSDs).

Skills

U6558.01 Install valves by:

- identifying process equipment operations and performance expectations;
- selecting valves for the application including but not limited to globe, plug, gate, ball, butterfly, v-ball;
- applying sealants and gaskets;
- installing valve in the process system;
- securing valves in system;
- checking functionality of valves;
- completing and updating documentation;

so that the valves are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** A Trainer may be a Supervisor or the competent employee designated by the Apprentice's Sponsor.**

U6558.02 **Troubleshoot valves** by:

- interpreting job documentation and manufacturers' specifications;
- identifying type and characteristics of valves;
- identifying faults including but not limited to leaking, packing and worn or damaged parts;
- function-testing the valve for faults;
- isolating valve and performing safety procedures;
- repacking the valves using Teflon, graphite or rope;
- replacing valve components including but not limited to cages, plugs, seats and stems;
- cleaning and lubricating components;
- making adjustments;
- performing completion tests by stroking the valve;
- completing and updating documentation;

so that the valves are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6558.03 **Install actuators (pneumatic, electric or hydraulic)** by:

- selecting the actuator for the application including but not limited to spring return, double-acting, rotary, fail-open and fail-close;
- selecting actuator size and components including but not limited to cylinders, diaphragms, pistons, couplings, springs, motors, bushings and O- rings;
- configure the actuator for the applications;
- connecting actuator to the valve;
- bench-setting the actuators;
- verifying operation of the actuators;
- completing and updating documentation;

so that actuators are matched and connected to the valve in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6558.04 **Troubleshoot actuators (pneumatic, electric or hydraulic)** by:

- inspecting the actuators;
- isolating equipment and performing safety procedures;
- diagnosing source of problem;
- identifying faults including but not limited to air supply, leaking diaphragms, broken springs, and defective O-rings;
- removing and replacing components including but not limited to O-rings, diaphragms, pistons, motors and springs;
- cleaning and lubricating actuator components;
- re-building actuator;
- returning actuator to operational service;
- performing a completion test to confirm operation;
- completing and updating documentation;

so that the actuators are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6558.05 **Install positioners** by:

- selecting positioners for application and actuator type;
- installing positioner components including but not limited to levers, nozzles, flappers, diaphragms, feedback linkages, I/P transducers, cams, rollers, regulators, limit switches and bellows;
- selecting the auxiliaries including but not limited to position locks and boosters;
- orientating and mounting the positioner to the actuator;
- connecting the positioner to the signal and supply lines;
- configuring the positioners;
- verifying operation of positioners;
- completing and updating documentation;

so that the positioners are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6558.06 **Troubleshoot positioners** by:

- identifying type and parameters of positioners;
- identifying faults in equipment including but not limited to leaks and defective parts;
- isolating equipment and performing safety procedures;
- removing and replacing components including but not limited to seals, flappers, nozzles, springs, relays, motors and auxiliaries;
- cleaning positioner components;
- calibrating positioners using equipment including but not limited to handheld calibrators, computers and hand pumps;
- making adjustments;
- returning positioner to operational service;
- performing a completion test to confirm operation
- completing and updating documentation;

so that positioners are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6558.07 **Install Variable Speed Drives (VSDs)** by:

- selecting drives for the application;
- selecting drive components including but not limited to fans, environmental filters, panels and enclosures;
- selecting auxiliaries including but not limited to dynamic braking unit, surge suppression and harmonic filters;
- fastening or bracketing to secure the drives;
- connecting the drives to the signal and supply lines;
- configuring the drives;
- verifying operation of the drives;
- completing and updating documentation;

so that drives are operational and functioning, in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6558.08 **Troubleshoot Variable Speed Drives (VSDs)** by:

- identifying type and parameters of the drives;
- identifying faults including but not limited to connections and defective parts;
- isolating equipment and performing safety procedures;
- removing and replacing components including but not limited to fans, environmental filters, wiring, rectifiers, dynamic braking unit and fuses;
- verify configuration;
- making adjustments;
- performing a completion test to verify confirm operation;
- returning the drives to operational service;
- completing and updating documentation;

so that the drives are operational and functioning in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559 Process Control Systems

General Performance Objective

Work with process control systems by determining and configuring process control strategy; installing, configuring and troubleshooting stand-alone controllers (pneumatic and electronic) and Programmable Logic Controllers (PLCs); installing, configuring, troubleshooting and performing preventative maintenance on Distributed Control Systems (DCSs); installing, configuring and troubleshooting Human Machine Interfaces (HMIs); demonstrating knowledge of Supervisory Control and Data Acquisition (SCADA) systems.

Skills

U6559.01 Determine process control strategy by:

- reading and interpreting job documentation and manufacturers' specifications;
- identifying type of control strategy including but not limited to Proportional, Integral, Derivative (PID), feed forward/back, cascade, ratio, continuous, batch, single-loop and multi-loop;
- identifying process to be controlled;
- identifying control equipment characteristics and limitations;
- identifying memory restrictions and number of input/output points;
- using specialized equipment including but not limited computers and software;

so that the end results of the control strategy are identified in accordance with manufacturers' and job specifications, drawings, and documentation.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

*** A Trainer may be a Supervisor or the competent employee designated by the Apprentice's Sponsor.**

U6559.02 **Configure process control strategy** by:

- identifying configuration methods and requirements;
- identifying specific control strategies and interaction of other processes;
- identifying control parameters limits including but not limited to PID, alarm settings and limits;
- using specialized equipment including but not limited to computers and software;
- implementing control strategy using configuration software and routines;
- optimizing process controls using various loop tuning methods
- verifying the end results;
- complete and updating documentation;

so that process control strategies are configured in accordance with manufacturers' and job specifications, drawings and documentation.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.03 **Install stand-alone controllers (pneumatic and electronic)** by:

- identifying type and number of inputs and outputs;
- identifying environmental conditions including but not limited to extreme ambient temperature, cleanliness, or contamination;
- selecting controllers according to application, process and control strategy;
- determining required power supply;
- determining locations for controllers;
- fastening or bracketing to secure controllers;
- connecting, configuring and calibrating controllers to the process system;
- verifying operation;
- completing and updating documentation;

so that stand-alone controllers are installed in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.04 **Configure stand-alone controllers (pneumatic and electronic)** by:

- identifying configuration techniques applied to specific control strategies;
- using specialized equipment including but not limited to computers and software;
- configuring controllers using user interfaces, handheld programmers and computers;
- identifying control parameters and process limitations;
- isolating equipment and performing safety procedures;
- tuning controllers to the process conditions;
- returning controllers to service;
- completing and updating documentation;

so that stand-alone controllers are configured in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.05 **Troubleshoot stand-alone controllers (pneumatic and electronic)** by:

- identifying controller functions and process control strategy;
- performing system diagnostics;
- isolating equipment and performing safety procedures;
- identifying controller deviations, faults and errors;
- identifying process upset conditions and limitations;
- tuning controller parameters to varying process conditions;
- upgrading software and firmware;
- calibrating controller;
- returning controller to operational service;
- completing and updating documentation;

so that stand-alone controllers are maintained in accordance with manufacturers' and job specifications, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.06 **Install Programmable Logic Controllers (PLCs)** by:

- identifying type of PLC, architecture and capabilities;
- identifying environmental conditions including but not limited to heat, cleanliness, and contamination;
- selecting PLC and components for the process;
- determining required power supply;
- determining locations for PLCs;
- mounting PLC;
- connecting PLC and terminating I/O;
- completing and updating documentation;

so that PLCs are installed in accordance with manufacturers' and job specifications, licensing, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.07 **Configure Programmable Logic Controllers (PLCs)** by:

- identifying PLC language including but not limited to ladder, function block, sequential function chart and script;
- identifying PLC programs and associate software including but not limited to word processors, spreadsheets and databases;
- using specialized equipment including but not limited to user interfaces, computers and software;
- configuring PLCs using programming/configuring software;
- establishing I/O list
- identifying PLC parameters and process limitations;
- isolating the controller from the process;
- returning PLC to operational service;
- commissioning and verification of operation;
- completing and updating documentation;

so that PLCs are configured in accordance with manufacturers' and job specifications, licensing, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.08 **Troubleshoot Programmable Logic Controllers (PLCs)** by:

- identifying computer applications related to PLC functions;
- identifying communication systems used by PLCs;
- identifying PLC language;
- identifying configuration parameters;
- using programming/configuring software, diagnostic tools and equipment;
- interpreting software reports and documentation to identify network programs;
- forcing, disabling or bypassing I/Os;
- performing shut-down and start-up of PLCs;
- upgrading software and firmware;
- making program modifications;
- removing and re-installing components;
- replacing batteries, fans and environmental filters;
- backing-up programs, and completing and updating documentation;

so that PLCs are returned to operating specifications in accordance with manufacturers' and job specifications, licensing, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.09 **Install Distributed Control Systems (DCSs)** by:

- identifying types of DCS, architectures and capabilities;
- identifying DCS language including but not limited to ladder, function block and script;
- identifying DCS components including but not limited to power supply, processor, memory and I/O;
- selecting required power supply and grounding methods;
- identifying signals including but not limited to digital or analog signals;
- determining compatibility with other process control systems;
- identifying environmental conditions including but not limited to heat, cleanliness or contamination;

- confirming installation details of DCS components including but not limited to cabinets, operator stations and servers;
- mounting DCS components including but not limited to I/O cards and power supplies;
- connecting wiring, I/O and network to DCS;

so that DCSs are installed in accordance with manufacturers' and job specifications, licensing, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.10 Configure Distributed Control Systems (DCSs) by:

- identifying DCS programs and associated software;
- identifying DCSs language including but not limited to ladder, function block and script;
- updating operating software;
- creating and validating DCS configuration according to rack and cabinet layout;
- establish I/O list
- programming DCS to include comments and displays;
- configuring external communication with other systems and devices;
- backing-up and restoring configurations;
- commissioning and verification of operation;
- completing and updating documentation;

so that DCSs are configured in accordance with manufacturers' and job specifications, licensing, drawings, schematics, environmental protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.11 Troubleshoot Distributed Control Systems (DCSs) by:

- identifying computer programs and software related to DCS functions;
- identifying DCS language including but not limited to function block and script;
- backing-up and restoring program and configuration;
- forcing, disabling and bypassing I/Os;
- shutting down and starting up DCS components;
- upgrading software and firmware;
- making program modifications;
- removing and re-installing devices;
- replacing backup batteries;
- cleaning fans and environmental filters;
- completing and updating documentation;

so that DCSs are returned to operating specifications in accordance with manufacturers' and job specifications, licensing, drawings, schematics, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.12 Perform preventative maintenance on Distributed Control Systems (DCSs) by:

- using diagnostic tools and software;
- investigating symptoms and conditions including but not limited to network and communication problems;
- isolating problem by reviewing error codes, logs and status lights;
- using diagnostic procedures including but not limited to forcing I/O and setting traps or counters;
- checking power source for appropriate voltage level;
- running and interpreting self-diagnostic and alarm indicators;
- backing-up program and configuration;
- completing and updating documentation;

so that DCS is maintained in accordance with manufacturers' and job specifications, licensing, drawings, schematics, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.13 **Install Human Machine Interfaces (HMIs)** by:

- identifying types of HMI software, hardware, design and capabilities;
- determining compatibility with other process control systems;
- identifying communication networks and protocols;
- identifying environmental conditions including but not limited to heat, cleanliness and contamination;
- selecting HMI software and operator interface equipment;
- installing operating software;
- connecting communication links;
- fastening to secure the HMI;

so that HMIs are installed in accordance with manufacturers' and job specifications, licensing, drawings, schematics, communication networks and protocols, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.14 **Configure Human Machine Interfaces (HMIs)** by:

- identifying HMI programs and associated software;
- identifying data types and addressing scheme;
- updating programming/configuring software and firmware;
- generating operator displays;
- configuring external communication;
- backing-up and restoring configurations;
- commissioning HMI;
- completing and updating documentation;

so that HMIs are configured in accordance with manufacturers' and job specifications, licensing, drawings, schematics, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.15 Troubleshoot Human Machine Interfaces (HMIs) by:

- identifying HMI programs and associated software ;
- investigating faulty configuration or errors;
- determining interaction with PLCs and DCS systems;
- using diagnostic procedures, tools and software;
- isolating problem by reviewing error codes, logs and status lights;
- identifying probable root cause;
- locating faults;
- backing-up program and configuration;
- returning HMI to operational service;

so that HMIs are interacting with PLCs and DCS in accordance with manufacturers' and job specifications, licensing, drawings, schematics, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

U6559.16 **Demonstrate knowledge of Supervisory Control and Data Acquisition (SCADA) systems**, including but not limited to:

- RTUs, PLCs, DCSs, HMIs, communication systems and interconnection media;
- wireless SCADA system components including but not limited to satellite, radio and cellular;
- servers for data acquisition and storage;
- they may have the added ability to store, measure, trend and manipulate data for reporting purposes;

so they can be used for control applications including but not limited to remote shut-down and start-up of equipment in accordance with manufacturers' and job specifications, licensing, drawings, schematics, company standards/procedures and applicable Acts, Legislation, Codes and Regulations.

mm/dd/yy	Trainer Print Name	*Trainer Signature
mm/dd/yy	Apprentice Print Name	Apprentice Signature

Definitions

Apprentice

- An individual who, pursuant to a registered Training Agreement, is receiving or is to receive training in a trade that is required as part of an apprenticeship program
- Holds a Training Agreement in either a compulsory or non-compulsory trade;
- Are subject to any ratios that have been set out in regulation and or recommended by industry for their trade(s);
- Remain as an Apprentice until they receive their Certificate of Apprenticeship

BOSTA

Building Opportunities in the Skilled Trades Act, 2021 (BOSTA)

Certificate of Apprenticeship (C of A)

A certificate issued to individuals who have demonstrated that they have completed an apprenticeship program in Ontario.

Certificate of Qualification (C of Q)

A certificate issued to an individual who has completed an apprenticeship or equivalent AND passed the Certificate of Qualification examination.

Competence

The ability of an individual to perform a skill, consistently without assistance, in the workplace as set out in the Logbook.

Competency Analysis Profile (CAP Chart)

A chart that identifies the training needs of an individual trade and details the skills/skill sets that must be demonstrated during an apprenticeship program.

Journeyperson

Journeyperson means an individual who holds a certificate of qualification (in a compulsory or non-compulsory trade) and/or an individual who practices as a journeyperson in a non-compulsory trade who does not hold a certificate of qualification and has equivalent experience in that trade.

Mandatory Skill

Status assigned to unshaded individual skills, skill sets or general performance objectives which must be signed-off for the Apprentice to complete their program.

Optional Skill

Status assigned to shaded individual skills, skills sets or general performance objectives for which sign-off is not required for the Apprentice to complete the program.

Provisional Certificates of Qualification

- A Provisional Certificate of Qualification is issued to an individual who has obtained a Certificate of Apprenticeship (in both compulsory and non-compulsory trades) in a program that has a Certificate of Qualification examination, to which the individual has not yet passed the Certificate of Qualification examination.
- A Provisional Certificate of Qualification shall have the prescribed term or, if no term is prescribed, a term of one year.
- In a compulsory trade, the Provisional Certificate of Qualification allows a person to continue working legally in the trade for up to 12 months while they work to pass the certifying exam.
- Individuals with a Provisional Certificate of Qualification are subject to any ratios that have been set out for their trade(s).

Ratios

For the purpose of an Apprenticeship program, a ratio is the maximum number of Journeypersons to Apprentices. The purpose of ratios is to provide consistent supervision, training and continuity of work.

Red Seal Program

The Interprovincial Standards Red Seal Program (also known as the Red Seal Program) was established more than 50 years ago to provide greater mobility across Canada for skilled workers and represents a standard of excellence for industry. Through the program, individuals are able to obtain a Red Seal endorsement on their provincial/territorial certificates by achieving 70% or higher on an interprovincial Red Seal examination.

The Interprovincial Standards Red Seal Program acknowledges their competence and ensures recognition of their certification throughout Canada without further examination. There are currently over 50 Red Seal designated trades. **The Red Seal Program is recognized as the interprovincial *standard of excellence* in the skilled trades.** The Interprovincial Standards Red Seal Program is a partnership between the Government of Canada, the Provinces, the Territories and various stakeholders.

Sign-off

Signature of the Sponsor of record, or an individual to whom that Sponsor has delegated signing authority, (e.g. Trainer) indicating an Apprentice’s demonstration of competence.

Skill

Individual competency/task described in the Logbook.

Skill Sets

Group or selection of individual skills found in the Logbook.

Skill Set Completion for Sponsors
Listing for all skill sets and includes space for sign-off by Sponsor of record.

Sponsor
Means a person that has entered into a registered Training Agreement under which the person is required to ensure that an individual is provided with workplace-based training in a trade as part of an apprenticeship program.

Sponsor of Record
Refers to the Sponsor documented as being signatory to the registered Training Agreement or Contract of Apprenticeship. In order for a Sponsor to be considered for the training of Apprentices, they must identify that the workplace has qualified persons or the equivalent on site, and can identify that the workplace has the tools, equipment, materials, and processes which have been identified by the Industry representatives for the trade.

Trainer
An individual who oversees the performance of a task and sets the workplace expectations and practices for the Apprentice. For a compulsory trade, a qualified Trainer is an individual who holds a Certificate of Qualification. In a non-compulsory trade, a Trainer is an individual who either holds a CofQ, CofA, or is considered equivalent.

Ready to Write Your Exam?

Many of the skilled trades in Ontario have a final certification examination that you must pass to become certified in your trade. Passing the examination gives you the right to hold yourself out as a Journeyperson and receive a Certificate of Qualification in your trade.

There are two types of trade certification examinations in Ontario:

1. Provincial (Ontario) examinations - which lead to a Certificate of Qualification.
2. Red Seal examinations – which lead to a Certificate of Qualification with an Interprovincial Red Seal endorsement.

If a trade is designated as Red Seal in Ontario, you will be writing the Red Seal examination. To access the Red Seal preparation guide please visit: red-seal.ca

Ontario's Exam Preparation Guide
Exam Resources – Skilled Trades Ontario

Basic Examination Details for You to Know

- You will have **up to four hours to write your examination.**
- Accommodations must be requested and approved prior to scheduling your examination.
- You can leave the examination centre if you complete the examination in less than four hours.
- Exam questions are multiple choice with four options from which you must choose the correct answer. Your examination may have between 90 and 150 multiple choice questions.
- You need a mark of 70% to pass.

Scheduling Your Examination
The examination scheduling process is currently outlined in detail on the Skilled Trades Ontario website: Exam Scheduling – Skilled Trades Ontario

Remember these 3 basic steps:

1. Confirm your eligibility to write the examination with Skilled Trades Ontario.
2. Contact Client Services at Skilled Trades Ontario to pay your examination fee.
3. Contact the local Service Delivery Office to schedule your examination in their examination centre: https://www.ontario.ca/page/employment-ontario-apprenticeship-offices

Instructions for Recording a Change in Sponsor

1. Record your first sponsor's information in Sponsor Record #1 – this would be the sponsor who has signed your initial apprenticeship Training Agreement for this trade.
2. If you do change sponsors prior to completing this apprenticeship, please contact your local Service Delivery Office immediately to update your sponsor record.
3. Please make sure you record all the information regarding any additional sponsors of record towards your apprenticeship using the Sponsor Records on the following pages (if applicable).

   You must fill out a Change of Sponsor Record each time you change your sponsor.

Sponsor Record #1

Sponsor Information		
Apprentice Name		
Training Agreement #		**Date (mm/dd/yy)**
Sponsor Name		
Address		
Telephone		
E-mail Address		

Summary of Training	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	
Skill Sets Completed	

As the Sponsor, I hereby confirm that the above information is true and accurate to the best of my knowledge.

Signature: _____ Date: (mm/dd/yy) _____

The Sponsor is required to sign-off and date the skills after the Apprentice has proven competence in those skills. However, if a skill is shaded, it is optional and does not need to be signed-off.

***If you need additional copies of the Sponsor Record, visit SkilledTradesOntario.ca and search Sponsor Record Form.**

Change of Sponsor Record #2

Sponsor Information		
Apprentice Name		
Training Agreement #		**Date (mm/dd/yy)**
Sponsor Name		
Address		
Telephone		
E-mail Address		

Summary of Training	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	
Skill Sets Completed	

As the Sponsor, I hereby confirm that the above information is true and accurate to the best of my knowledge.

Signature: _____ Date: (mm/dd/yy) _____

The Sponsor is required to sign-off and date the skills after the Apprentice has proven competence in those skills. However, if a skill is shaded, it is optional and does not need to be signed-off.

***If you need additional copies of the Sponsor Record, visit SkilledTradesOntario.ca and search Sponsor Record Form.**

Change of Sponsor Record #3

Sponsor Information		
Apprentice Name		
Training Agreement #		**Date (mm/dd/yy)**
Sponsor Name		
Address		
Telephone		
E-mail Address		

Summary of Training	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	
Skill Sets Completed	

As the Sponsor, I hereby confirm that the above information is true and accurate to the best of my knowledge.

Signature: _____ Date: (mm/dd/yy) _____

The Sponsor is required to sign-off and date the skills after the Apprentice has proven competence in those skills. However, if a skill is shaded, it is optional and does not need to be signed-off.

***If you need additional copies of the Sponsor Record, visit SkilledTradesOntario.ca and search Sponsor Record Form.**

Change of Sponsor Record #4

Sponsor Information		
Apprentice Name		
Training Agreement #		**Date (mm/dd/yy)**
Sponsor Name		
Address		
Telephone		
E-mail Address		

Summary of Training	
Employment Start Date	
Employment End Date	
Total hours of training & instruction between dates of employment.	
Skill Sets Completed	

As the Sponsor, I hereby confirm that the above information is true and accurate to the best of my knowledge.

Signature: _____ Date: (mm/dd/yy) _____

The Sponsor is required to sign-off and date the skills after the Apprentice has proven competence in those skills. However, if a skill is shaded, it is optional and does not need to be signed-off.

***If you need additional copies of the Sponsor Record, visit SkilledTradesOntario.ca and search Sponsor Record Form.**

Appendix A — Instructions for Apprenticeship Program Completion

Once an Apprentice has completed all the classroom training and benchmark on-the-job hours specified for the trade and has acquired all the mandatory skills included in this Logbook.

The Apprentice and the Sponsor complete the Apprentice Completion Form and the Skill Set Completion for Sponsors Form located on the following pages.

1. They sign the forms and submit them to their local Service Delivery Office. To find the closest office, check the contact information at ontario.ca/page/employment-ontario-apprenticeship-offices *or call the Employment Ontario toll free number at (1-800-387-5656).*

2. For All Trades: All mandatory skills (or the combination indicated in the completion requirements for the trade) in the Logbook must be signed-off. The recommended hours are a benchmark. If the Sponsor is completing the Apprentice before the industry recommended training hours are done, staff may request further information regarding the Apprentice's on-the-job training. An example of a request would be a letter from the Sponsor confirming the Apprentice worked for some time in the trade before the initial Training Agreement was registered, thereby acquiring some skills beforehand.

If Apprentices are submitting the completion request form and supporting documentation to their local Service Delivery Office by mail, fax, or email (as a scanned document), they should not include their Logbook; if they are presenting this form in person at the local Service Delivery Office, they should bring their Logbook with them.

After staff verifies all the information in the completion request, they may contact either the Apprentice or the Sponsor for further information or documentation. Once the completion has been confirmed, the local Service Delivery Office will issue a Certificate of Apprenticeship to the Apprentice.

Skilled Trades Ontario will receive notification of this completion.

- If the Apprentice has completed a program in a **compulsory trade,** Skilled Trades Ontario will automatically register the Apprentice for a Provisional Certificate of Qualification to continue to work legally for one year while preparing for the certification examination.
- If an Apprentice completes their apprenticeship in a **non-compulsory trade** and there is a Certificate of Qualification exam, they must write and pass the exam to receive a Certificate of Qualification from Skilled Trades Ontario.

For permission to schedule an exam once completion is confirmed, the individual must first contact the Skilled Trades Ontario Client Services Department at 647-847-3000 or toll free at 1-855-299-0028 to pay the certification examination fee. Once you have paid your exam fee with Skilled Trades Ontario, book your exam by contacting your nearest Employment Ontario local Service Delivery Office.

Appendix B — Apprentice Completion Form

Please fill out both sides of this form, including the Skill Set Completion for Sponsors (see back of form). Once both sides are completed, submit the form to your local Service Delivery Office (find contact information at ontario.ca/page/employment-ontario-apprenticeship-offices or by calling Employment Ontario at (1-800-387-5656).

Apprentice Information	
Name (print)	
Client ID # Issued by Ministry	
Telephone Number(s)	

Sponsor Information	
Legal Name	
Address	
Telephone Number(s)	
Sponsor's Signing Authority *(print name)*	
E-mail Address	

Program Information			
Trade Name			
Number of hours required as per Training Agreement *(hours-based trades only)*			
Hours completed? *(documentation attached)*	Yes ( )	No ( )	Not applicable ( )
Classroom training completed or exempt?	Yes ( )	No ( )	Not applicable ( )

I hereby confirm that the information submitted on both sides of this form is true and accurate.

X_____ **X**_____

Apprentice's Signature Date **Signature of Sponsor's Signing Authority Date**

Appendix C — Skill Set Completion for Sponsors

You will find the skill set numbers and titles in the Logbook's Table of Contents. By signing off each skill set in the table below, you are providing final confirmation, as the Apprentice's Sponsor, that the Apprentice has demonstrated competency in all the mandatory skills included in the skill set.

Skill Set #	Skill Set Title	Signing Authority Signature
U6551	Safe Working Practices and Procedures	
U6552	Occupational Skills	
U6553	Process Measurement and Indicating Devices	
U6554	Process, Quality Control and Environmental Analyzers	
U6555	Safety and Security Systems and Devices	
U6556	Energy Delivery Systems	
U6557	Communication Systems and Devices	
U6558	Final Control Devices	
U6559	Process Control Systems	

Ministry of Labour, Immigration, Training and Skills Development use only:

Sponsor verified as most recent sponsor of record: Yes ( ) No ( )

Documentation to support completion of hours attached: Yes ( ) No ( )

Completion of classroom training verified: Yes ( ) No ( )

Staff Name_____ Signature _____

Date _____

Appendix D — Local Service Delivery Offices in Ontario

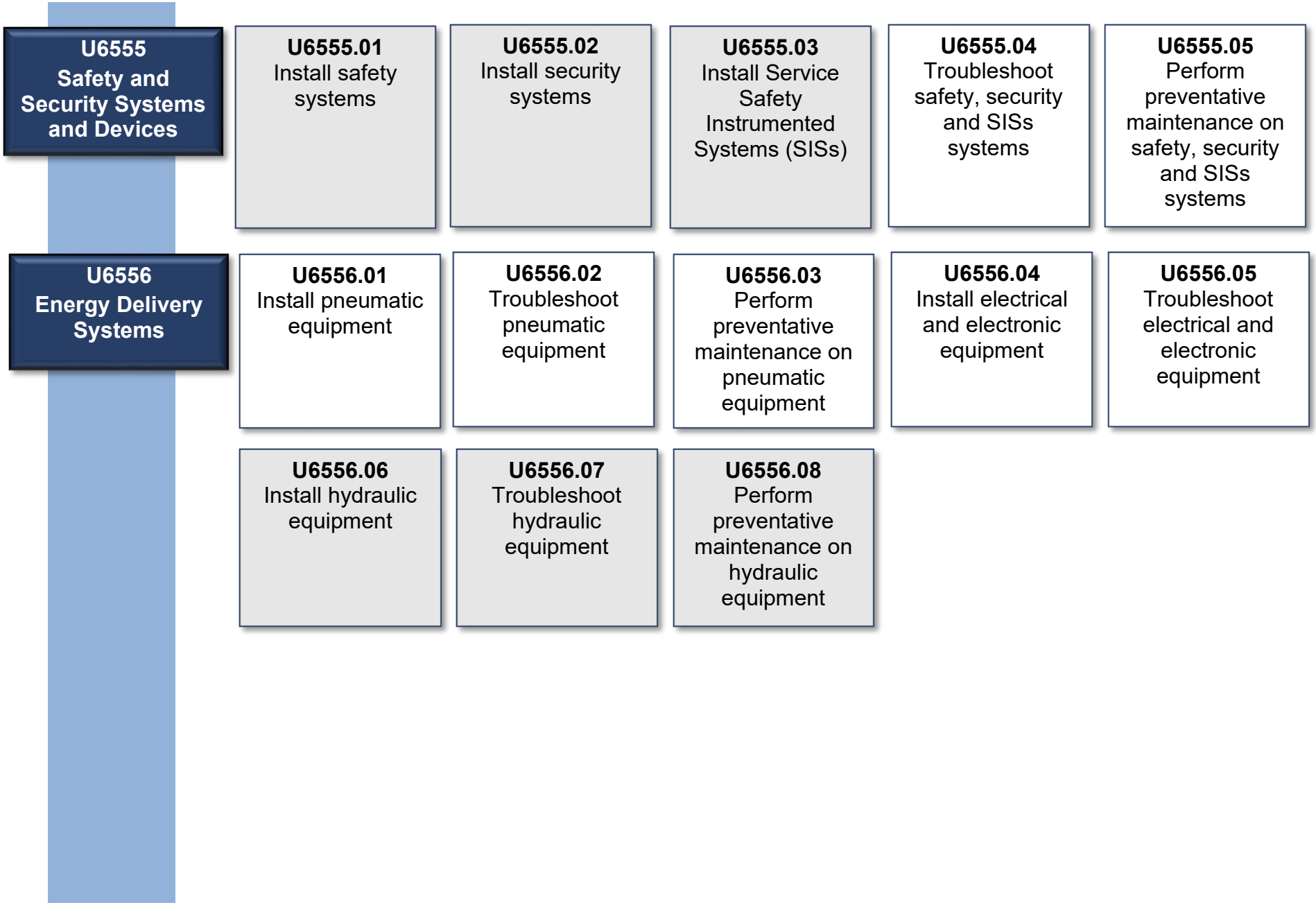
For current office listings visit: *ontario.ca/page/employment-Ontario-apprenticeship-offices*

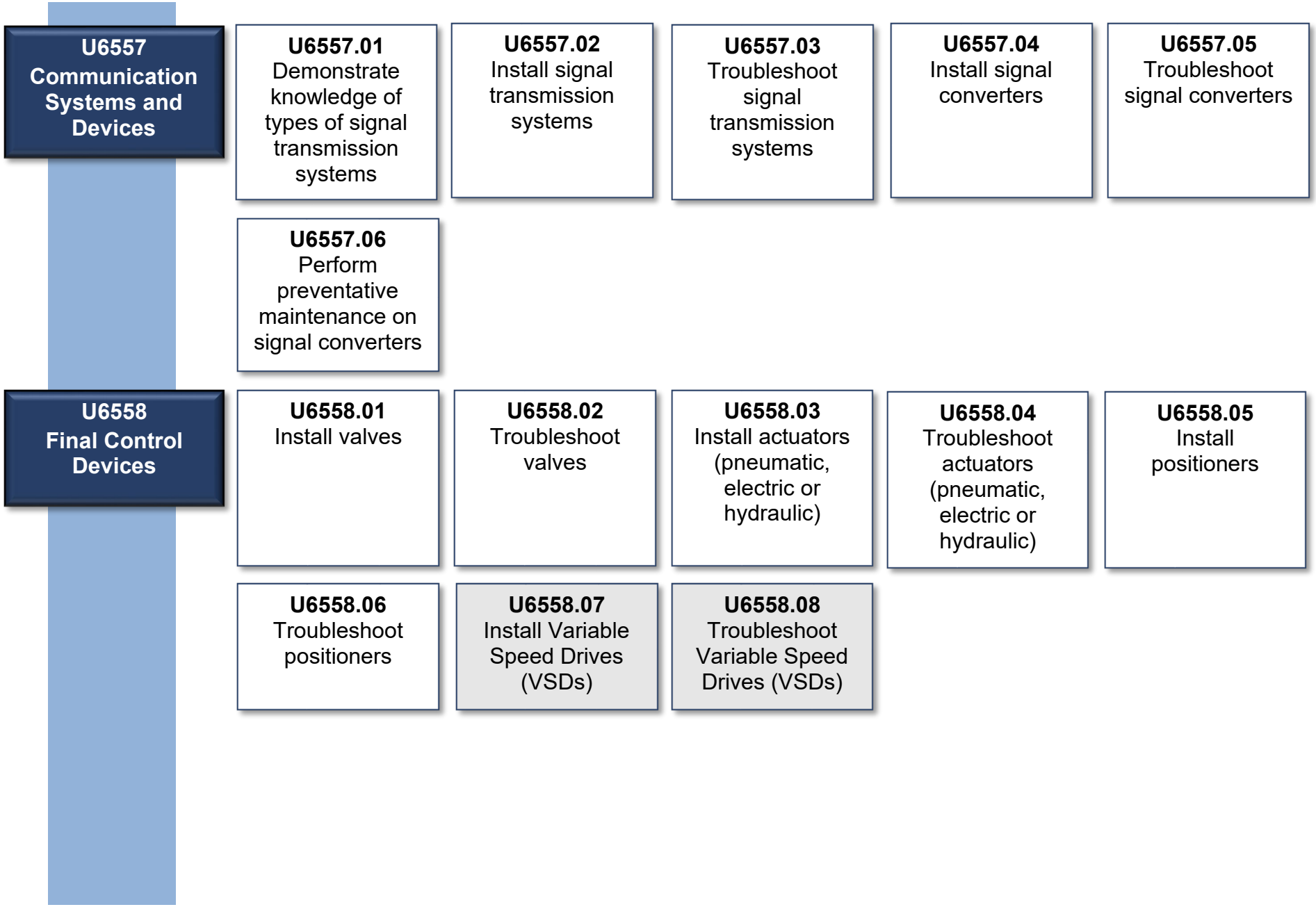
Location	Contact	Location	Contact
Barrie 705-737-1431	55 Cedar Pointe Dr Unit 609, Barrie, ON L4N 5R7	**Marathon** 807-346-1550	52 Peninsula Road, Suite 103 Marathon, Ontario, P0T 2E0
Belleville 613-968-5558 1-800-953-6885	135 North Front St, Belleville, ON K8P 3B5	**Markham** 905-513-2695	140 Allstate Parkway, Suite 505, Markham, Ontario L3R 5Y8
Brantford 519-756-5197	505 Park Rd North Suite 201, Brantford, ON N3R 7K8	**North Bay** 705-495-8515 1-800-236-0744	200 First Ave West, North Bay, ON P1B 3B9
Chatham 519-354-2766 1-800-214-8284	870 Richmond St West 1st Floor, Chatham, ON N7M 5J5	**Ottawa** 613-731-7100 1-877-221-1220	Preston Square, 347 Preston Street, Suite 310, Ottawa, ON K1S 3H8
Cornwall 613-938-9702 1-877-668-6604	132 Second St East Ste 202, Cornwall, ON K6H 1Y4	**Owen Sound** 519-376-5790 1-800-838-9468	1450 1st Ave West, Suite 100, Owen Sound, ON N4K 6W2
Dryden 807-456-2665 1-800-734-9572	Provincial Government Building, 479 Government St, Dryden, ON P8N 3K9	**Peel** 905-279-7333 1-800-736-5520	The Emerald Centre, 10 Kingsbridge Garden Circle, Suite 404, Mississauga, ON L5R 3K6
Durham 905-433-0595 1-800-461-4608	78 Richmond Street West, Oshawa, ON L1G 1E1	**Pembroke** 613-735-3911 1-800-807-0227	615 Pembroke St East, Pembroke, ON K8A 3L7
Elliot Lake 1-800-236-8817	50 Hillside Dr North, Elliot Lake, ON P5A 1X4	**Peterborough** 705-745-1918 1-877-433-6555	901 Lansdowne St West, Peterborough, ON K9J 1Z5
Fort Frances 807-274-8634	922 Scott St 2nd Flr, Fort Frances, ON P9A 1J4	**Sarnia** 519-542-7705 1-800-363-8453	Bayside Mall, 150 Christina St North, Sarnia, ON N7T 7W5
Geraldton 807-854-1966	208 Beamish Avenue West Geraldton, Ontario P0T 1M0	**Sault Ste. Marie** 705-945-6815 1-800-236-8817	477 Queen St East 4th Flr, Sault Ste Marie, ON P6A 1Z5
Halton 905-842-5105 1-844-901-5105	700 Dorval Dr., Suite 201, Oakville, ON L6K 3V3	**St Catharines** 905-704-2991 1-800-263-4475	Garden City Tower, 301 St Paul St East, 10th Flr, St Catharines, ON L2R 7R4
Hamilton 905-521-7764 1-800-668-4479	Ellen Fairclough Bldg, 119 King St West 8th Flr, Hamilton, ON L8P 4Y7	**Sudbury** 705-564-3030 1-800-603-5999	159 Cedar St Ste 506, Sudbury, ON P3E 6A5
Kapuskasing 705-465-5785 705-235-1950	Ontario Government Complex, 122 Government Rd West, Kapuskasing, ON P5N 2X8	**Thunder Bay** 807-346-1550 1-800-439-5493	189 Red River Rd Suite 103, Thunder Bay, ON P7B 1A2
Kenora 807-468-2879 1-800-734-9572	227 1/2 Second St South, Kenora, ON P9N 1G4	**Timmins** 705-235-1950 1-877-275-5139	Ontario Government Complex, 5520 Highway 101 East Wing B, South Porcupine, ON P0N 1H0
Kingston 613-548-1151 1-866-973-4043	Alliance Business Centre, 299 Concession St Ste 201, Kingston, ON K7K 2B9	**Toronto Centre** 416-927-7366 1-800-387-5656	2 St Clair West, 11th floor Toronto, ON M4A 1L5
Kitchener 519-653-5758 1-866-877-0099	4275 King St East, Kitchener, ON N2P 2E9	**Toronto South** 416-326-5800	625 Church St 1st Fl, Toronto, ON M7A 2B5
London 519-675-7788 1-800-265-1050	1200 Commissioners Rd E, Unit 72, London, ON N5Z 4R3	**Windsor** 519-973-1441	Roundhouse Centre, 3155 Howard Ave 2nd Fl, Suite 200, Windsor, ON N8X 4Y8

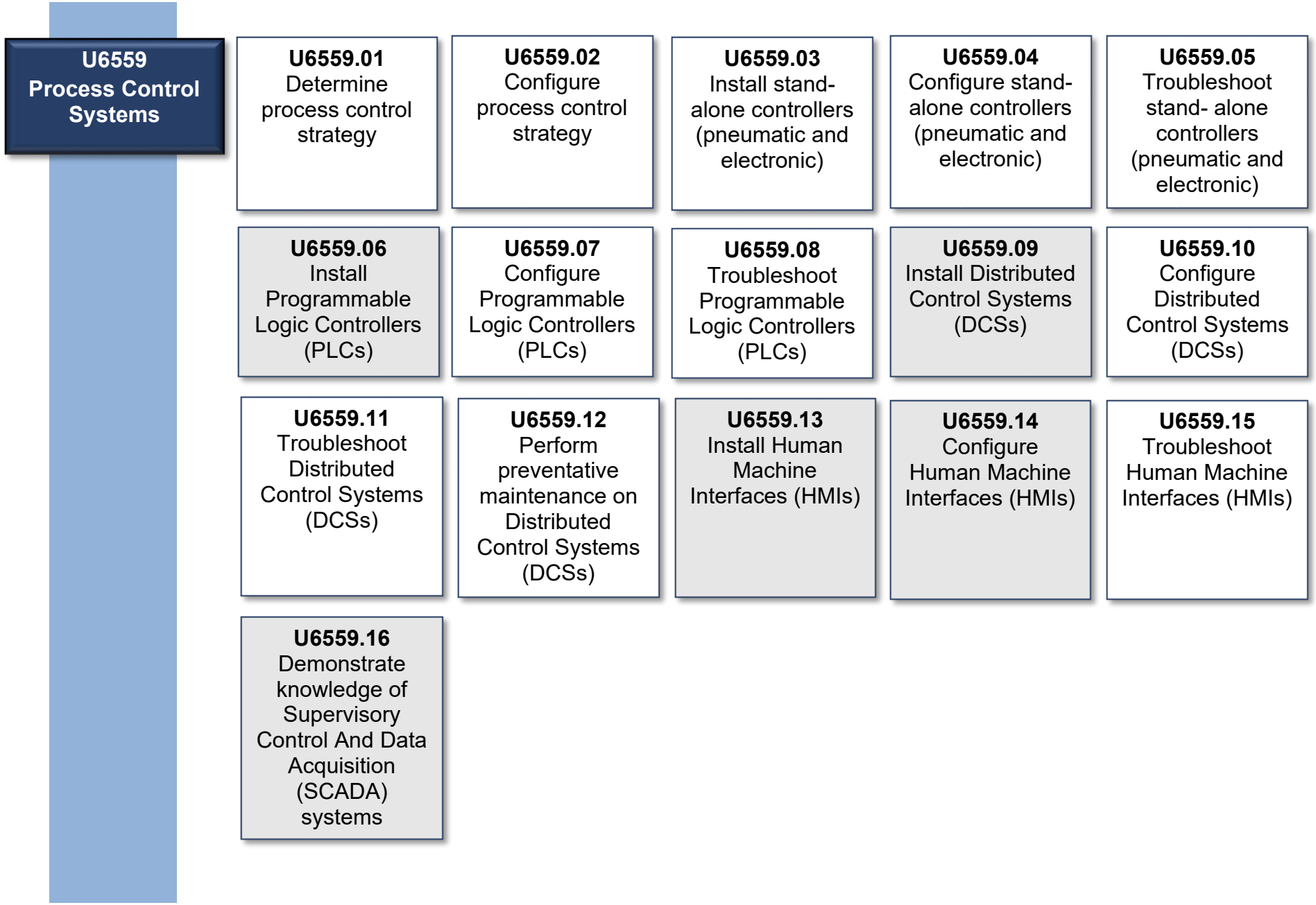
Competency Analysis Profile (CAP) Chart

U6551 Safe Working Practices And Procedures	**U6551.01** Work nearby workplace health and safety hazards	**U6551.02** Handle workplace hazardous materials	**U6551.03** Follow procedures for handling worksite waste	**U6551.04** Comply with federal, provincial or municipal workplace legislation and regulations	**U6551.05** Use Personal Protective Equipment
	U6551.06 Practice good housekeeping in the workplace	**U6551.07** Shut down equipment	**U6551.08** Follow fire safety procedures	**U6551.09** Identify the impact of environmental and atmospheric extremes	**U6551.10** Work nearby energy sources
U6552 Occupational Skills	**U6552.01** Select, inspect, use and maintain hand tools	**U6552.02** Select, inspect, use and maintain portable and stationary power tools	**U6552.03** Maintain calibration, configuration or test equipment	**U6552.04** Interpret schematics and drawings	**U6552.05** Use job documentation
	U6552.06 Install mounting hardware	**U6552.07** Install process connections	**U6552.08** Use specialized computer equipment and software	**U6552.09** Operate material handling equipment	

U6553 Process Measurement and Indicating Devices	**U6553.01** Install pressure, temperature, level or flow measuring and indicating devices	**U6553.02** Troubleshoot pressure, temperature, level or flow measuring and indicating devices	**U6553.03** Perform preventative maintenance on pressure, temperature, level or flow measuring and indicating devices	**U6553.04** Install motion, speed, position or vibration measuring or indicating devices	**U6553.05** Troubleshoot motion, speed, position or vibration measuring or indicating devices
	U6553.06 Perform preventative maintenance on motion, speed, position or vibration measuring or indicating devices	**U6553.07** Install mass, density or consistency measuring or indicating devices	**U6553.08** Troubleshoot mass, density or consistency measuring or indicating devices	**U6553.09** Perform preventative maintenance on mass, density or consistency measuring or indicating devices	
U6554 Process, Quality Control and Environmental Analyzers	**U6554.01** Install process analyzers	**U6554.02** Troubleshoot process, quality control and environmental emission analyzers	**U6554.03** Perform preventative maintenance on process, quality control and environmental emission analyzers	**U6554.04** Calibrate process, quality control and environmental emission analyzers	


U6555
Safety and Security Systems and Devices
U6555.01
Install safety systems
U6555.02
Install security systems
U6555.03
Install Service Safety Instrumented Systems (SISs)
U6555.04
Troubleshoot safety, security and SISs systems
U6555.05
Perform preventative maintenance on safety, security and SISs systems
U6556
Energy Delivery Systems
U6556.01
Install pneumatic equipment
U6556.02
Troubleshoot pneumatic equipment
U6556.03
Perform preventative maintenance on pneumatic equipment
U6556.04
Install electrical and electronic equipment
U6556.05
Troubleshoot electrical and electronic equipment
U6556.06
Install hydraulic equipment
U6556.07
Troubleshoot hydraulic equipment
U6556.08
Perform preventative maintenance on hydraulic equipment


U6557 Communication Systems and Devices
U6557.01 Demonstrate knowledge of types of signal transmission systems
U6557.02 Install signal transmission systems
U6557.03 Troubleshoot signal transmission systems
U6557.04 Install signal converters
U6557.05 Troubleshoot signal converters
U6557.06 Perform preventative maintenance on signal converters
U6558 Final Control Devices
U6558.01 Install valves
U6558.02 Troubleshoot valves
U6558.03 Install actuators (pneumatic, electric or hydraulic)
U6558.04 Troubleshoot actuators (pneumatic, electric or hydraulic)
U6558.05 Install positioners
U6558.06 Troubleshoot positioners
U6558.07 Install Variable Speed Drives (VSDs)
U6558.08 Troubleshoot Variable Speed Drives (VSDs)


U6559
Process Control Systems
U6559.01
Determine process control strategy
U6559.02
Configure process control strategy
U6559.03
Install stand-alone controllers (pneumatic and electronic)
U6559.04
Configure stand-alone controllers (pneumatic and electronic)
U6559.05
Troubleshoot stand- alone controllers (pneumatic and electronic)
U6559.06
Install Programmable Logic Controllers (PLCs)
U6559.07
Configure Programmable Logic Controllers (PLCs)
U6559.08
Troubleshoot Programmable Logic Controllers (PLCs)
U6559.09
Install Distributed Control Systems (DCSs)
U6559.10
Configure Distributed Control Systems (DCSs)
U6559.11
Troubleshoot Distributed Control Systems (DCSs)
U6559.12
Perform preventative maintenance on Distributed Control Systems (DCSs)
U6559.13
Install Human Machine Interfaces (HMIs)
U6559.14
Configure Human Machine Interfaces (HMIs)
U6559.15
Troubleshoot Human Machine Interfaces (HMIs)
U6559.16
Demonstrate knowledge of Supervisory Control And Data Acquisition (SCADA) systems

Notes

Completing Your Apprenticeship Program

Once your sponsor agrees you are competent in the required skills, your hours are complete and you have completed all the levels of classroom training required for your trade:

- ✓ Follow the completion instructions on the Completion Form (Appendix A) in the Logbook.
- ✓ Answer any questions that MLITSD staff may have and provide any additional completion documentation that may be required.
- ✓ Once completion is confirmed, MLITSD will issue you a Certificate of Apprenticeship and notify Skilled Trades Ontario.

After Your Apprenticeship

If you are in a trade with a certification exam, Skilled Trades Ontario will receive notice of your completion.

For compulsory trades, you will be issued a Provisional Certificate of Qualification which will allow you to work legally for up to 12 months until you write and pass your examination.

For a non-compulsory trade, once you pass your examination, you will be issued a Certificate of Qualification for your trade.

Preparing For Your Exam

- **To pay for a Certificate of Qualification examination, contact Skilled Trades Ontario** Client Services Department at: 647-847-3000 or toll free at 1-855-299-0028
- **To schedule your exam:** Once you have paid, contact your local Service Delivery Office to book your exam.
- **Download Skilled Trades Ontario exam preparation guide at:** Exam Resources – Skilled Trades Ontario **and/or view the exam preparation guide for Red Seal trades at:** red-seal.ca

Skilled Trades Ontario | Métiers spécialisés Ontario

SkilledTradesOntario.ca

Instrumentation and Control Technician