



**ONTARIO COLLEGE OF TRADES**  

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**ORDRE DES MÉTIERS DE L'ONTARIO**

Apprenticeship  
Training Standard  
Log Book

**Automotive Service  
Technician**

310S

## What Is This About?

The Apprenticeship Training Standard Log Book identifies all the skills associated with your trade in Ontario. It is written in statements that describe how you, the apprentice, must perform each skill in order to be considered competent in that skill.

## Training As An Apprentice

- ✔ Notify Ministry of Training, Colleges and Universities (MTCU) staff **immediately** of any changes to contact information or training agreement, especially if you change sponsors.
- ✔ Review the Log Book regularly with your trainer and sponsor to track your progress.
- ✔ 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.
- ✔ Pay your annual membership fee to the Ontario College of Trades and keep your membership in good standing.



## Completing Your Log Book

There are two types of signatures required in your Log Book:

### Skill Confirmation

**You and your trainer** sign off each required skill to confirm that you have demonstrated competency in that skill.

### Skill Set Confirmation

After you and your trainer have signed off all the required skills in a skill set, **your sponsor** signs the signature box at the end of each skill set to confirm your competency in the skill set.

Shaded boxes in your Log Book 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.

## Changing Sponsors

- ✔ Contact the Ministry of Training, Colleges and Universities immediately if you change sponsors as you will need to sign a new Registered Training Agreement.
- ✔ Record your original Sponsor's information in Sponsor Record #1 (the sponsor who has signed your initial Registered Training Agreement).



**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.**



**ONTARIO COLLEGE OF TRADES**  
**ORDRE DES MÉTIERS DE L'ONTARIO**

Apprentice Name: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

Phone Number: \_\_\_\_\_

Email Address: \_\_\_\_\_

Trade: \_\_\_\_\_

**Ministry of Training, Colleges and Universities Registered Training Agreement #:**

**OCOT Membership #:**

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 Training Standard Log Book or about your Apprenticeship program, contact your Apprenticeship office (see Appendix D in this book) or the Employment Ontario hotline at: 1-800-387-5656.**

You must become a member of the College of Trades Apprentices Class and maintain your membership in good standing while you complete your training. For more information on membership, please visit the College of Trades website at: [collegeoftrades.ca](http://collegeoftrades.ca)

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Any updates to this publication are available on-line; to download this document in PDF format, please follow the link: [collegeoftrades.ca](http://collegeoftrades.ca).

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## TERMS AND CONDITIONS AS PER REGISTERED TRAINING AGREEMENT

### The Apprentice agrees:

- to inform the Ministry of Training, Colleges and Universities of any change to their 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 Apprentice Training Standard Log Book (Log Book) for the Trade which is part of the apprenticeship program established by the Ontario College of Trades for the trade;
- to obtain written verification from the Sponsor and the Trainer(s) that the requirements in the Log Book for the trade have been met.

### The Sponsor agrees:

- to ensure that the Apprentice is provided with the training required as part of the apprenticeship program established by the College of Trades for this trade;
- to ensure that the Trainer(s) verifies, in writing, when each skill identified in the Log Book for the trade has been successfully completed by the Apprentice;
- 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.

| RESOURCE  | LINK   |
|---|--|
| Red Seal Program  | <a href="http://www.red-seal.ca">www.red-seal.ca</a>                                 |
| Ministry of Training, Colleges and Universities               | <a href="http://www.tcu.gov.on.ca">www.tcu.gov.on.ca</a>                             |
| Employment Ontario  | <a href="http://www.tcu.gov.on.ca">www.tcu.gov.on.ca</a>                             |
| Service Canada  | <a href="http://www.servicecanada.gc.ca">www.servicecanada.gc.ca</a>                 |
| <i>Ontario College of Trades and Apprenticeship Act, 2009</i> | <b><i><a href="#">Ontario College of Trades and Apprenticeship Act, 2009</a></i></b> |
| Ontario Ministry of Labour – Health and Safety Partners       | <a href="http://www.labour.gov.on.ca">www.labour.gov.on.ca</a>                       |
| College of Trades Appointments Council                        | <a href="http://www.cot-appointments.ca">www.cot-appointments.ca</a>                 |
| Essential Skills Ontario                                      | <a href="http://www.essentialskillsontario.ca">www.essentialskillsontario.ca</a>     |
| Exam Preparation Guide  | <a href="http://www.collegeoftrades.ca">www.collegeoftrades.ca</a>                   |

## **INTRODUCTION TO THE LOG BOOK**

On April 8th, 2013, the Ontario College of Trades (College) became responsible for the development and maintenance of Log Books in the Province of Ontario.

Please refer to the College of Trades website for the most accurate and up-to-date information: [collegeoftrades.ca](http://collegeoftrades.ca)

This Log Book is intended to be used by the Apprentice and Sponsor as an official record of training. The completion of this document is necessary to complete your apprenticeship and receive your Certification of Apprenticeship.

The Log Book identifies skills required for this trade and its related training program. It has been written in statements which describe how you, the Apprentice, must perform each skill in order to become competent in your trade.

The Trainer and Apprentice are required to confirm and date each skill after the Apprentice has proven competence in these skills. However, if a skill is shaded, it is optional and does not need to be signed off.

This on-the-job Log Book is a document issued to Apprentices who sign a Registered Training Agreement in the Province of Ontario. It is designed to record an Apprentice's acquired skills and time worked for the trade to which they are registered. This Log Book is developed by the Ontario College of Trades and used by the Ministry of Training, Colleges and Universities.

This Apprenticeship Log Book for Automotive Service Technician 310S was developed in consultation with representatives from industry and may include members from a related Trade Board/Working Committees.

The information presented in this standard is, to the best of our knowledge, current at time of printing and is intended for general application.

## **ROLES AND RESPONSIBILITIES**

### **Ontario College of Trades**

Under the [Ontario College of Trades and Apprenticeship Act, 2009 \(OCTAA\)](#), the College of Trades is responsible for:

- Establishing and maintaining qualifications for membership;
- Issuing Certificates of Qualification and Statements of Membership;
- Maintaining a [Public Register](#) of members;
- Receiving and investigating complaints, and determining disciplinary action;
- Establishing Apprenticeship Programs, Training Standards and Scopes of Practice for each trade;
- Conducting Trade Equivalency Assessments;
- Determining Journeyman-to-Apprentice ratios;
- Addressing compliance with legislation (OCTAA) and regulations; and,
- Promoting the skilled trades and conducting research.

For any matters related to your membership in the Apprentices class, you must contact the College of Trades directly at: (647) 847-3000 or toll free at: 1(855) 299-0028.

### **Ministry of Training, Colleges and Universities**

Is responsible for:

- Registering Training Agreements;
- Approving which persons may provide apprenticeship training;
- Approving Training Delivery Agents;
- Issuing Certificates of Apprenticeship;
- Administering Certificate of Qualification examinations;
- Promoting skilled trades and apprenticeship;
- Conducting policy development, evaluation and research; and,
- Passing regulations.

For any matter related to your Registered Training Agreement or completing your apprenticeship, you must contact your Local Apprenticeship Office at the Ministry of Training, Colleges and Universities.



### Roles and Responsibilities of the Apprentice

An Apprentice is an individual who has entered into an Registered Training Agreement with a Sponsor to receive training in a trade as part of an apprenticeship program established by the College of Trades.

As an Apprentice, you have certain roles and responsibilities to follow throughout your apprenticeship training:

Steps:

1. You must become a member of the College of Trades Apprentices Class and maintain your membership in good standing while you complete your training. For more information on membership, please visit the College of Trades website at: [collegeoftrades.ca](http://collegeoftrades.ca)
2. As an Apprentice, you are responsible for completing skills or skill sets in this Log Book and ensuring that they are dated and signed by both you and your Trainer.
3. You must also ensure your Skill Set Completion Form is completed and signed by your current Sponsor once you have demonstrated competence in all the mandatory skills in this Log Book. Once this is done, we recommend you submit the Log Book to your local Ministry of Training, Colleges and Universities office.
4. You are responsible for informing the staff at your local Ministry of Training, Colleges and Universities 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.
5. You must present the Apprentice Completion Form (Please refer to Appendix B), once all unshaded skills and skill sets have been completed within this document, along with your authorized Log Book to your local Ministry of Training, Colleges and Universities office.

### **Roles and Responsibilities of Sponsors and Trainers**

Log Books identify the on-the-job skills required for a trade and its related training program.

This Log Book has been written in concise statements which describe how well an Apprentice must perform each skill in order to become competent. Competence means being able to perform to the required standard.

By using this Log Book, Trainers will be able to ensure that the Apprentice is developing skills detailed for the trade.

Trainers and Apprentices are required to sign and date the skills following each successful acquisition.

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.

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.

### **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, employees and the public. Therefore, it is imperative that all parties become aware of circumstances that may lead to injury or harm. Safe learning experiences and environments can be created by controlling the variables and behaviours that may contribute to or cause an accident or injury.

It is generally recognized that a safe attitude contributes to an accident free environment. Everyone will benefit as a result of a healthy attitude towards prevention of accidents.

A tradesperson is possibly exposed to more hazards than any other person in the work force and, therefore, should be familiar with and apply Occupational Health and Safety Act and Regulations dealing with personal safety and the personal safety rules applying to each task.

#### **Legal and Administrative Aspects of Safety:**

Accident prevention and the provisions of safe working conditions are the responsibilities of an employer and employee.

#### **Employer's Responsibilities - The employer is responsible for:**

- Providing and maintaining safety equipment and protective devices;
- Ensuring proper safe work clothing is worn;
- Enforcing safe working procedures;
- Providing safeguards for machinery, equipment and tools;
- Observing all accident prevention regulations; and,
- Training employees in the safe use and operation of equipment.

#### **Employee's Responsibilities - The employee is responsible for:**

- Working in accordance with the safety regulations pertaining to the job environment;
- Working in such a way as not to endanger themselves or fellow employees and the public.

#### **Workplace Health and Safety's Responsibilities:**

- Workplace Health and Safety (Ontario's Ministry of Labour) will conduct periodic inspections of the workplace to ensure that safety regulations for industry are being observed.

## **APPRENTICESHIP PROGRAM SUMMARY**

The **Scope of Practice for the trade of Automotive Service Technician** is set out in section 10 of Ontario Regulation 277/11 under OCTAA and reads as follows: includes engaging in the servicing, repairing, overhauling, diagnosing or inspecting of motor vehicles by doing any of the following:

- Disassembling, adjusting, repairing and reassembling engines, transmissions, clutches, rear ends, differentials, brakes, drive shafts, axles and other assemblies.
- Testing for and correcting faulty alignment of wheels, axles, frames and steering mechanisms.
- Diagnosing faults in, repairing or replacing suspension systems, including shock absorbers and spring assemblies.
- Diagnosing faults in, installing, repairing and removing ignition, charging and starting systems, panel instruments, wiring and other electrical and electronic systems and equipment.
- Diagnosing faults in, repairing and adjusting fuel systems, engine management systems and emission control systems.
- Diagnosing faults in, installing, inspecting, maintaining and removing air-conditioning and refrigeration and heating systems.

**Automotive Service Technician** is an approved apprenticeship program for the purposes of the *Ontario College of Trades Apprenticeship Act, 2009* (OCTAA).

\*While the Training Standard draws on the scope of practice regulation (Section 10 of Ontario Regulation 277/11 under OCTAA) the Training Standard 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 **6500** hours as the duration necessary for any Apprentice to become competent in the skills required. There may be circumstances in which the duration varies from this guideline.

#### **In-School 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.

### **Program Requirements**

#### **Compulsory and Voluntary Classification**

Regulations under OCTAA set out the regulated trades in Ontario and the classification of each trade as either “compulsory” or “voluntary.” The trade of Automotive Service Technician is compulsory.

### **Journey person to Apprentice Ratio**

While some of the trades regulated under OCTAA are subject to Journey person to Apprentice ratios (ratios) set out in regulation, this trade is not one of them. Instead, industry has recommended a Journey person to Apprentice ratio guideline of 1 Journey person to 1 Apprentice as the ratio necessary for an Apprentice to be properly trained on the job in this program.

### **Eligibility for Apprenticeship Program Completion**

The Apprentice must:

- Achieve competency in all mandatory (unshaded) skills as identified in the Log Book
- Complete the in-school training as outlined in the industry and Ministry of Training, Colleges and Universities approved Curriculum Standard

It is the responsibility of an Apprentice to maintain a training record in the form of an Ontario College of Trades Apprenticeship Training Standard Log Book. The Sponsor and Trainer are required to sign off when competencies in the trade are achieved.

### **Essential Skills**

Essential skills are needed for work, learning and life. They provide the foundation for learning all other skills and enable people to evolve with their jobs and adapt to workplace change. Through extensive research, the Government of Canada and other national and international agencies have identified and validated nine essential skills. These skills are used in nearly every occupation and throughout daily life in different ways.

A series of tools endorsed by the Canadian Council of Directors of Apprenticeship (CCDA) have been developed to support apprentices in their training and to be better prepared for a career in the trades. The tools can be used independently or with the assistance of a tradesperson, trainer, employer, teacher or mentor to:

- Understand how essential skills are used in the trades;
- Learn about individual essential skills strengths and areas for improvement, and,
- Improve essential skills and increase success in an apprenticeship program.

A link to the complete essential skills profile for Red Seal trades can be found at [red-seal.ca](http://red-seal.ca).

## **TRAINING THE APPRENTICE**

### **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 habits;
- Use your Apprenticeship Log Book as a journal to keep track of the skills you have achieved;
- Listen to the suggestions of your Trainer;
- Discuss your training needs with your Sponsor;
- Review your training plan with your Training Consultant, Trainer, or Sponsor;
- 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 the individual skills. Once a 'set of skills' have been signed off, ensure your Sponsor signs off this area as well.

### **Sponsor**

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.

### **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.);
- Encourage safe work habits;
- Provide time for the Trainer to 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;
- Set out clear expectations, and recognize good performance;
- Involve both the Apprentice and Trainer in developing the training plan and observe frequently;
- Provide constructive feedback and conduct regular performance reviews involving the Apprentice and Trainer;
- Use the Log Book 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.

### 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 a member of the College of Trades Journeypersons Class.

In voluntary trades, a Trainer is an individual who holds one of the following:

- A valid Certificate of Qualification and is a member of the College of Trades Journeypersons Class; or,
- Holds a Statement of Membership in the College of Trades Tradespersons Class; or,
- Holds a Certificate of Qualification previously issued by Ministry of Training, Colleges and Universities; or,
- Holds 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 (eligible to apply to College membership in the Journeypersons or Tradespersons Classes) or has the skills outlined in the Log Book.

**A classroom instructor is not permitted to sign the skills contained within this Log Book.**

### 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 Log Book with the Apprentice and develop a training plan;
- Set out clear expectations and recognize good performance;
- Ensure that the Apprentice receives on-the-job trade training experience as outlined in this document;
- Encourage and respond to all questions;
- Be patient;
- Explain, show and demonstrate the skill;
- Provide continuous feedback;
- Sign skills when your Apprentice demonstrates competency, and,
- Use the Log Book as a guide to evaluate competence in each skill area. By using the Log Book, Trainers will be able to ensure that the Apprentice is developing skills outlined in this document.

## NOTICE OF COLLECTION OF PERSONAL INFORMATION

1. At any time during your apprenticeship training, you may be required to show this Log Book to the Ministry of Training, Colleges and Universities. You will be required to submit the signed Apprenticeship Completion form to the Ministry of Training, Colleges and Universities in order to complete your program. The Ministry of Training, Colleges and Universities 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 Ministry of Training, Colleges and Universities will disclose information about your program completion and your Certificate of Apprenticeship to the Ontario College of Trades, as it is necessary for the College of Trades to carry out its responsibilities.
3. Your personal information is collected, used and disclosed by the Ministry under the authority of the *Ontario College of Trades and Apprenticeship Act, 2009*.
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 Training, Colleges and Universities  
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.



**COMPETENCY ANALYSIS PROFILE  
AUTOMOTIVE SERVICE TECHNICIAN – 310S**

*(All unshaded skill sets must be demonstrated/completed)*

**SKILL SETS**

**SKILLS**

|  |  |  |   |   |   |
|--|--|--|---|---|---|
| <b>OCCUPATIONAL HEALTH &amp; SAFETY PROCEDURES</b> | Identify potential workplace health and safety hazards | Handle, store and dispose of hazardous materials | Wear and maintain personal protective equipment | Comply with workplace-related legislation | Interpret and apply service related information |
| <b>U5160.0</b>                                     | 5160.01  | 5160.02  | 5160.03   | 5160.04                                   | 5160.05   |
|  | Practice good housekeeping in the workplace            | Comply with WHMIS guidelines                     |   |   |   |
|  | 5160.06  | 5160.07  |   |   |   |

|                       |  |   |   |  |   |
|-----------------------|--|---|---|--|---|
| <b>ENGINE SYSTEMS</b> | Perform visual inspection  | Diagnose and troubleshoot cooling system and components   | Repair cooling system and components                    | Verify repair of cooling system and components | Diagnose and troubleshoot engine lubricating systems and components |
| <b>U5161.0</b>        | 5161.01  | 5161.02   | 5161.03   | 5161.04  | 5161.05   |
|                       | Repair engine lubricating system and components                  | Verify repair of engine lubricating system and components | Diagnose and troubleshoot cylinder head and components  | Repair cylinder head and components            | Verify repair of cylinder head and components                       |
|                       | 5161.06  | 5161.07   | 5161.08   | 5161.09  | 5161.10   |
|                       | Diagnose and troubleshoot engine block assemblies and components | Repair engine block assemblies and components             | Verify repair of engine block assemblies and components |  |   |
|                       | 5161.11  | 5161.12   | 5161.13   |  |   |

## AUTOMOTIVE SERVICE TECHNICIAN

### SKILL SETS

### SKILLS

|   |   |   |  |  |  |
|---|---|---|--|--|--|
| <b>ELECTRICAL SYSTEMS - STARTING AND CHARGING</b><br><br><b>U5162.0</b> | Perform visual inspection<br><br>5162.01                                  | Diagnose and troubleshoot batteries<br><br>5162.02  | Service and boost/charge batteries<br><br>5162.03                                    | Diagnose and troubleshoot starting system and components<br><br>5162.04                        | Repair starting system and components<br><br>5162.05   |
|   | Verify repair of starting system and components<br><br>5162.06            | Diagnose and troubleshoot charging system and components<br><br>5162.07                               | Repair charging system and components<br><br>5162.08                                 | Verify repair of charging system and components<br><br>5162.09                                 |  |
| <b>ENGINE MANAGEMENT SYSTEMS</b><br><br><b>U5163.0</b>                  | Perform visual inspection<br><br>5163.01                                  | Diagnose and troubleshoot fuel control system and components<br><br>5163.02                           | Repair fuel control system and components<br><br>5163.03                             | Verify repair of fuel control system and components<br><br>5163.04                             | Diagnose and troubleshoot ignition system and components<br><br>5163.05                      |
|   | Repair ignition system and components<br><br>5163.06                      | Verify repair of ignition system and components<br><br>5163.07  | Diagnose & troubleshoot computer-controlled systems & components<br><br>5163.08      | Repair computer-controlled systems and components<br><br>5163.09                               | Verify repair of computer-controlled systems and components<br><br>5163.10                   |
|   | Perform gasoline engine service<br><br>5163.11                            | Perform electronic diesel engine service<br><br>5163.12   | Perform mechanical diesel engine service<br><br>5163.13                              |  |  |
| <b>ELECTRICAL SYSTEMS - BODY</b><br><br><b>U5164.0</b>                  | Perform visual inspection<br><br>5164.01                                  | Diagnose and troubleshoot body electrical & computer-controlled systems and components<br><br>5164.02 | Repair body electrical and computer-controlled systems and components<br><br>5164.03 | Verify repair of body electrical and computer-controlled systems and components<br><br>5164.04 | Diagnose and troubleshoot supplemental restraint systems (SRS) and components<br><br>5164.05 |
|   | Repair supplemental restraint systems (SRS) and components<br><br>5164.06 | Verify repair of supplemental restraint systems (SRS) and components<br><br>5164.07                   |  |  |  |

## AUTOMOTIVE SERVICE TECHNICIAN

### SKILL SETS

### SKILLS

|                              |  |  |   |   |  |
|------------------------------|--|--|---|---|--|
| <b>FUEL DELIVERY SYSTEMS</b> | Perform visual inspection                  | Diagnose and troubleshoot gasoline fuel systems and components | Repair gasoline fuel systems and components | Verify repair of gasoline fuel systems and components | Diagnose and troubleshoot diesel fuel systems and components |
|                              | 5165.01                                    | 5165.02  | 5165.03                                     | 5165.04   | 5165.05  |
| <b>U5165.0</b>               |  |  |   |   |  |
|                              | Repair diesel fuels systems and components | Verify repair of diesel fuel systems and components            |   |   |  |
|                              | 5165.06                                    | 5165.07  |   |   |  |

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| <b>TRANSMISSION SYSTEMS</b> | Perform visual inspection  | Diagnose and troubleshoot clutch systems and components         | Repair clutch systems and components  | Verify repair of clutch system and components            | Diagnose and troubleshoot manual transmissions/transaxles and components |
|                             | 5166.01  | 5166.02   | 5166.03   | 5166.04  | 5166.05  |
| <b>U5166.0</b>              |  |   |   |  |  |
|                             | Repair manual transmissions/transaxles and components                | Verify repair of manual transmissions/transaxles and components | Diagnose and troubleshoot automatic transmissions/transaxles and components | Repair automatic transmissions/transaxles and components | Verify repair of automatic transmissions/transaxles and components       |
|                             | 5166.06  | 5166.07   | 5166.08   | 5166.09  | 5166.10  |
|                             | Diagnose and troubleshoot computer-controlled systems and components | Repair computer-controlled systems and components               | Verify repair of computer-controlled systems and components                 | Diagnose and troubleshoot transfer cases and components  | Repair transfer cases and components                                     |
|                             | 5166.11  | 5166.12   | 5166.13   | 5166.14  | 5166.15  |
|                             | Verify repair of transfer cases and components                       |   |   |  |  |
|                             | 5166.16  |   |   |  |  |

## AUTOMOTIVE SERVICE TECHNICIAN

### SKILL SETS

### SKILLS

|   |  |   |   |  |   |
|---|--|---|---|--|---|
| <b>DRIVE SHAFTS, DIFFERENTIALS, AND DRIVE AXLE ASSEMBLIES</b> | Perform visual inspection  | Diagnose and troubleshoot drive shafts, differentials, drive axle assemblies and components             | Repair drive shafts, differentials, drive axle assemblies and components    | Verify repair of drive shafts, differentials, drive axle assemblies and components |   |
| <b>U5167.0</b>  | 5167.01  | 5167.02   | 5167.03   | 5167.04  |   |
| <b>SUSPENSION SYSTEMS AND FRAMES</b>                          | Perform visual inspection  | Diagnose and troubleshoot suspension systems, frames/sub-frames and components                          | Repair suspension systems, frames/sub-frames, and components                | Verify repair of suspension systems, frames/sub-frames, and components             |   |
| <b>U5168.0</b>  | 5168.01  | 5168.02   | 5168.03   | 5168.04  |   |
| <b>STEERING SYSTEMS</b>                                       | Perform visual inspection  | Diagnose and troubleshoot steering systems and components   | Repair steering systems and components                                      | Verify steering systems and components   | Align steering, axles, and suspension   |
| <b>U5169.0</b>  | 5169.01  | 5169.02   | 5169.03   | 5169.04  | 5169.05   |
| <b>BRAKING SYSTEMS</b>  | Perform visual inspection  | Diagnose and troubleshoot hydraulic braking systems and components                                      | Repair hydraulic braking systems and components                             | Verify repair of hydraulic braking systems and components                          | Diagnose and troubleshoot anti-lock braking systems traction and stability control systems and components |
| <b>U5170.0</b>  | 5170.01  | 5170.02   | 5170.03   | 5170.04  | 5170.05   |
|   | Repair anti-lock braking systems (ABS) traction and stability control systems and components | Verify repair of anti-lock braking systems (ABS), traction and stability control systems and components | Diagnose and troubleshoot anti-skid/traction control systems and components | Repair anti-skid/traction control systems and components                           | Verify repair of anti-skid/traction control systems and components  |
|   | 5170.06  | 5170.07   | 5170.08   | 5170.09  | 5170.10   |
|   | Measure and resurface brake drums, linings and rotors  |   |   |  |   |
|   | 5170.11  |   |   |  |   |
| <b>TIRES, WHEELS, RIMS, AND HUBS</b>                          | Perform visual inspection  | Diagnose and troubleshoot tires and components  | Repair tires and components   | Verify repair of tires and components  | Balance tires and components  |
| <b>U5171.0</b>  | 5171.01  | 5171.02   | 5171.03   | 5171.04  | 5171.05   |

**SKILL SETS**

**SKILLS**

|  |   |  |   |   |   |
|--|---|--|---|---|---|
| <b>HEATING, VENTILATION AND AIR CONDITIONING SYSTEMS</b><br><br><b>U5172.0</b> | Perform visual inspection<br><br>5172.01              | Diagnose and troubleshoot air-conditioning systems and components<br><br>5172.02 | Repair air-conditioning systems and components<br><br>5172.03 | Verify repair of air-conditioning systems and components<br><br>5172.04 | Diagnose and troubleshoot heating and ventilation systems and components<br><br>5172.05 |
|  | Repair heating and ventilation systems<br><br>5172.06 | Verify repair of heating and ventilation systems<br><br>5172.07                  |   |   |   |
| <b>BODY AND TRIM</b><br><br><b>U5173.0</b>                                     | Perform visual inspection<br><br>5173.01              | Diagnose and troubleshoot body and trim<br><br>5173.02                           | Repair body and trim<br><br>5173.03                           | Verify repair of body and trim<br><br>5173.04                           |   |

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|---|---|---|--|---|--|
| <b>EXHAUST, INTAKE AND EMISSION CONTROL SYSTEMS</b><br><br><b>U5174.0</b> | Perform visual inspection<br><br>5174.01  | Diagnose and troubleshoot exhaust, and intake systems and components<br><br>5174.02 | Repair exhaust, and intake systems and components<br><br>5174.03                 | Verify repair of exhaust and intake systems and components<br><br>5174.04 | Diagnose and troubleshoot turbocharger/supercharger system and components<br><br>5174.05 |
|   | Repair turbocharger/supercharger system and components<br><br>5174.06                   | Verify repair of turbocharger/supercharger system and components<br><br>5174.07     | Diagnose and troubleshoot emission control systems and components<br><br>5174.08 | Repair emission control systems and components<br><br>5174.09             | Verify repair of emission control systems and components<br><br>5174.10                  |
|   | Diagnose and troubleshoot diesel emission control systems and components<br><br>5174.11 | Repair diesel emission control systems and components<br><br>5174.12                | Verify repair of diesel emission control systems and components<br><br>5174.13   |   |  |

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| <b>HYBRID VEHICLE SYSTEMS</b><br><br><b>U5175.0</b> | Perform visual inspection<br><br>5175.01 | Diagnose and troubleshoot hybrid vehicle systems and components<br><br>5175.02 | Repair hybrid vehicle systems and components<br><br>5175.03 | Verify repair of hybrid vehicle systems and components<br><br>5175.04 |  |
|---|--|--|---|---|--|

**U5160.0 OCCUPATIONAL HEALTH AND SAFETY PROCEDURES**

**GENERAL PERFORMANCE OBJECTIVE**

Comply with occupational health and safety procedures by: identifying potential workplace health and safety hazards; handling, storing and disposing of hazardous materials; wearing and maintaining personal protective equipment; complying with workplace-related legislation; interpreting and applying service-related information; practising good housekeeping in the workplace; and complying with Workplace Hazardous Materials Information System (WHMIS) guidelines, according to the Occupational Health and Safety Act, government regulations, company policy and manufacturer’s recommendations.

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**SKILLS**

**5160.01 Identify potential workplace health and safety hazards**, such as: excessive exhaust and/or explosive fumes, dust, sound levels, electrical and mechanical hazards (i.e., damaged or faulty air lines and/or inadequate ventilation); so that the potential for personal injury, damage to equipment, vehicles, and the environment are minimized; according to government regulations and company policy.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5160.02 Handle, store and dispose of hazardous materials**, such as: cleaning solvents, anti-freeze, transmission and brake fluids, engine oil, brake dust, battery acid, refrigerants, and gases; using personal protective equipment (PPE) and specified handling and storage equipment; so that individuals are protected from injury, the environment from contamination and safety procedures are followed; according to government regulations and company policy.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5160.03      Wear and maintain personal protective equipment**, such as: eye, ear, hand, respiratory, body, and foot protection; ensuring that correct fit and optimum protection is provided to the wearer for the specific task performed; according to the government regulations, manufacturer’s specifications and company policy.

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| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5160.04      Comply with workplace-related legislation**, relating to highway traffic safety, parts, warranties, occupational health/safety, environmental protection, and business and trade practices, such as: *Occupational Health and Safety Act, Motive Vehicle Repair Act, Highway Traffic Act* and the *Environmental Protection Act*; by identifying the personal and legal liabilities of automotive service technicians, and vehicle owners, when performing and/or conducting vehicle safety inspections, emissions tests, work estimates and repairing and/or replacing defective parts; according to government regulations.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5160.05      Interpret and apply service-related information**, such as: service bulletins, manuals, and parts catalogues, by: locating and identifying vehicle identification number (VIN), accessing computerized service information systems, so that service/repair is performed; according to company policy and/or manufacturer’s recommendations.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5160.06 Practice good housekeeping in the workplace**, by: applying fire hazard prevention methods, such as: maintaining a clean and orderly work area; identifying, removing and disposing of potential fire hazards; cleaning up grease, oil spills and/or fluids; ensuring work area is free of obstructions; and safely storing tools and shop equipment, to minimize accident or injury to self and others; according to government regulations and company policy.

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| (mm/dd/yy) | _____<br>Journey person (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)     | _____<br>College of Trades Member I.D.# |

**5160.07 Comply with Workplace Hazardous Materials Information System (WHMIS) guidelines**, such as; reading and interpreting labels and Material Safety Data Sheets (MSDS), ensuring receipt of training in WHMIS regulations and practices; according to the *Occupational Health and Safety Act*.

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| (mm/dd/yy) | _____<br>Journey person (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)     | _____<br>College of Trades Member I.D.# |

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| <b>SPONSOR CONFIRMATION FOR U5160: OCCUPATIONAL HEALTH AND SAFETY PROCEDURES</b> |  |  |
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| <b>Date Completed (mm/dd/yy)</b> | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |
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**U5161.0 ENGINE SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair engines, by: performing a visual inspection; diagnosing and troubleshooting cooling systems and components; repairing cooling systems and components, verifying repairs of cooling systems and components, diagnosing and troubleshooting engine lubricating systems and components; repairing engine lubricating systems and components; verifying repair of engine lubricating systems and components; diagnosing and troubleshooting cylinder heads and components; repairing cylinder heads and components; verifying repair of cylinder heads and components; diagnosing and troubleshooting engine blocks and components, repairing engine blocks and components, and verifying repair of engine blocks and components; according to manufacturer’s recommendations, specifications, and safety requirements.

**SKILLS**

**5161.01 Perform visual inspection**, identifying system types and applications, by: checking for: worn, loose, damaged, missing, leaking, or defective components, such as: coolant, radiators, reservoirs, surge tanks, coolant fans, hubs, pumps, controls, actuators, belts, hoses, lines, fittings, heat exchangers, gaskets, o-rings, seals, pipes, valves, sensors, temperature control devices, drive mechanisms, wiring harnesses, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5161.02 Diagnose and troubleshoot cooling systems and components**, such as: coolant, radiators, reservoirs, surge tanks, fans, hubs, coolant pump, controls, actuators, belts, hoses, lines, fittings, heat exchangers, seals, gaskets, o- rings, pipes, valves, sensors, relays, temperature control devices, drive mechanisms, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; checking for: leaks, odour, temperature, corrosion, colour, vibration/noise, coolant type, quantity and condition; using: hand, power, electronic service and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer’s recommendations, specifications and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5161.03 Repair cooling systems and components**, such as: coolant, radiators, reservoirs, surge tanks, fans, hubs, coolant pumps, controls, actuators, belts, hoses, lines, fittings, heat exchangers, seals, gaskets, o-rings, pipes, valves, sensors, relays, temperature control devices, drive mechanisms, wiring harnesses, and fasteners and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
| (mm/dd/yy) | Apprentice (Signature)    | College of Trades Member I.D.# |

**5161.04 Verify repair of cooling systems and components**, such as: coolant, radiators, reservoirs, surge tanks, fans, hubs, coolant pumps, controls, actuators, belts, hoses, lines, fittings, heat exchangers, seals, gaskets, o-rings, pipes, valves, sensors, temperature control devices, drive mechanisms, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power, electronic service and specialized tools; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
| (mm/dd/yy) | Apprentice (Signature)    | College of Trades Member I.D.# |

**5161.05 Diagnose and troubleshoot engine lubricating systems and components**, such as: oil, pumps, filters, housings, lines, fittings, seals, lubrication jets, gaskets, o-rings, heat exchangers, bypass valves, auxiliary devices, sensors, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; checking for: leaks, odour, temperature, distortion, corrosion, colour, vibration/noise, pressure, contamination, oil type and condition; using: hand, power, electronic service, and specialized tools; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
| (mm/dd/yy) | Apprentice (Signature)    | College of Trades Member I.D.# |

**5161.06 Repair engine lubricating systems and components**, such as: oil, pumps, filters, housings, lines, fittings, seals, lubrication jets, gaskets, o-rings, heat exchangers, bypass valves, auxiliary devices, sensors, wiring harnesses, and fastening and mounting devices, by: exchanging, reconditioning, or servicing; using: hand, power, electronic service, and specialized tools; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5161.07 Verify repair of engine lubricating systems and components**, such as: oil, pumps, filters, housings, lines, fittings, seals, lubrication jets, gaskets, o-rings, heat exchangers, bypass valves, auxiliary devices, sensors, wiring harnesses, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function; using: hand, power, electronic and specialized tools; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5161.08 Diagnose and troubleshoot cylinder head and components**, such as: seats, guides, seals, gaskets, o-rings, springs, retainers, rotators, injector tubes, expansion plugs, valves, actuating mechanisms, camshafts, drive mechanisms, and fasteners and mounting devices; by: testing, and analysing performance and function, checking for: corrosion, erosion, vibration/noise, carbon build-up, fractures, leaks, distortion, temperature and pressure, using hand, power, electronic service and specialized tools; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5161.09 Repair cylinder head and components**, such as: cylinder heads, seats, guides, seals, gaskets, o-rings, springs, retainers, rotators, injector tubes, expansion plugs, valves and actuating mechanisms, drive mechanisms, and fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, electronic service and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5161.10 Verify repair of cylinder heads and components**, such as: cylinder heads, seats, guides, seals, o-rings, springs, retainers, rotators, injector tubes, expansion plugs, valves and actuating mechanisms, drive mechanisms, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; using: hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations,

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5161.11 Diagnose and troubleshoot engine block assemblies and components**, such as: engine blocks, expansion plugs, piston assemblies, connecting rods, bearings, seals, gaskets, liners, counter balancers, crankshafts, flywheel assemblies, balance shafts, gear trains, camshafts, follower assemblies, harmonic balancers, pulleys, auxiliary drives, oil pans, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function, checking for: temperature, corrosion, erosion, vibration/noise, carbon build-up, fractures, distortion, alignment, leaks and pressure, using: hand, power, electronic service, specialized and precision measuring tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
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**5161.12 Repair engine block assemblies and components**, such as: engine blocks, expansion plugs, piston and connecting rod assemblies, bearings, seals, gaskets, sealants, liners, counter balancers, crankshafts, flywheel assemblies, balance shafts, gear trains, camshafts and follower assemblies, harmonic balancers, pulleys, auxiliary drives, oil pans, and fastening and mounting devices; by: exchanging, reconditioning, or servicing, using hand, power, electronic service, specialized and precision measuring tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyman (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature) | _____<br>College of Trades Member I.D.# |

**5161.13 Verify repair of engine block assemblies and components**, such as: engine blocks, expansion plugs, piston and connecting rod assemblies, bearings, seals, gaskets, sealants, liners, counter balancers, crankshafts, flywheel assemblies, balance shafts, gear trains, camshafts and follower assemblies, harmonic balancers, pulleys, auxiliary drives, oil pans, and mounts, by: visually inspecting, testing, and analyzing performance and function; using: hand, power, electronic service, specialized and precision measuring tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyman (Signature) | _____<br>College of Trades Member I.D.# |
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**SPONSOR CONFIRMATION FOR U5161: ENGINE SYSTEMS**

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| <b>Date Completed (mm/dd/yy)</b> | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |
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**U5162.0      ELECTRICAL SYSTEMS - STARTING AND CHARGING**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair electrical systems - starting and charging, by: performing a visual inspection; diagnosing and troubleshooting batteries; servicing and boosting, or charging batteries; diagnosing and troubleshooting starting systems and components; repairing starting systems and components; verifying repair of starting systems and components; diagnosing and troubleshooting charging systems and components; repairing charging systems and components, and verifying repair of charging systems and components, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5162.01      Perform visual inspection**, identifying system types and applications, by: checking for worn, damaged, corroded, loose, or defective components, such as: batteries, starters, cables, connectors, solenoids, relays, sensors, modules, regulators, circuit protection devices, wiring harnesses, gauges, alternating current (AC) generators (alternators), and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5162.02      Diagnose and troubleshoot batteries**, by testing, and analyzing performance and function, checking for: corrosion, distortion, contamination, state of charge, voltage, amperage, temperature, and leaks, using: electronic service tools, load testers, chargers, and hydrometers; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5162.03 Service and boost/charge batteries**, such as: single- and multi battery group, by: removing, cleaning, charging and/or replacing; using: hand tools, booster cables, booster packs, chargers, pullers, special cleaning tools; according to manufacturer's recommendations, specifications, and safety requirements.

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**5162.04 Diagnose and troubleshoot starting systems and components**, such as: batteries, cables, connectors, circuit protection devices, neutral safety devices, solenoids, relays, switches, starting motors, wiring harnesses, and fasteners and mounting devices, by: visually inspecting, testing, and analysing performance and function; checking for: wear, noise, odour, corrosion, temperature, opens/shorts/grounds, resistance, voltage and amperage; using: hand, power, and electronic service tools, and load testers, according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5162.05 Repair starting systems and components**, such as: batteries, cables, connectors, circuit protection devices, solenoids, relays, switches, starting motors, wiring harnesses, and fastening and mounting devices, by: exchanging, reconditioning or servicing; using: hand, power, specialized, electronic service tools, and lifting, rigging and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
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**5162.06 Verify repair of starting systems and components**, such as: batteries, cables, connectors, circuit protection devices, solenoids, relays, switches, starting motors, drive mechanisms, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized, and electronic service tools; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
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**5162.07 Diagnose and troubleshoot charging systems and components**, such as: alternating current (AC) generators (alternators), drive belt mechanisms, batteries, cables, terminals, wiring harnesses, voltage regulators, relays, switches, sensors, modules, warning devices, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; checking for: opens/ shorts/grounds, voltage, amperage, resistance, vibration/noise, alignment, odour, corrosion and temperature; using: amperes, volts, resistance (AVR) testers, and electronic service tools, according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
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**5162.08 Repair charging systems and components**, such as: alternating current (AC) generators (alternators), drive mechanisms, batteries, cables, hardware, voltage regulators, switches, relays, sensors, modules, wiring harnesses, and fastening and mounting devices, by: exchanging, reconditioning, or servicing; using: hand, power, electronic service, and specialized tools; according to manufacturer's recommendations, specifications, and safety requirements.

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**5162.09 Verify repair of charging systems and components**, such as: alternating current (AC) generators (alternators), drive mechanisms, batteries, cables, hardware, voltage regulators, switches, relays, sensors, modules, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power, electronic service, and specialized tools; according to manufacturer's recommendations, specifications, and safety requirements.

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| <b>SPONSOR CONFIRMATION FOR U5162: ELECTRICAL SYSTEMS - STARTING AND CHARGING</b> |
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**U5163.0 ENGINE MANAGEMENT SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair engine management systems, by: performing a visual inspection; diagnosing and troubleshooting fuel control systems and components; repairing fuel control systems and components; verifying repair of fuel control systems and components; diagnosing and troubleshooting ignition systems and components; repairing ignition systems and components; verifying repair of ignition systems and components; diagnosing and troubleshooting computer-controlled systems and components; repairing computer-controlled systems and components; verifying repair of computer-controlled systems and components; performing gasoline engine service; performing electronic diesel engine service and compression tests, and performing mechanical diesel engine service, according to manufacturer's recommendations, specifications, and safety requirements.

**5163.01 Perform visual inspection**, identifying system types and applications, by: checking: for worn, loose, damaged, leaking, missing, or defective components, such as: mechanically- and electronically controlled gasoline and diesel engines, electronic fuel injection, ignition systems, switches, resistors, sensors, modules, information/warning displays, wiring harnesses, and fastening and mounting devices; according to manufacturer’s recommendations, specifications and safety requirements.

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**5163.02 Diagnose and troubleshoot fuel control systems and components**, such as: fuel, malfunction indicator lights (MIL), warning devices, solenoids, relays, sensors, modules, injectors, pumps, actuator modules, interfaces, data links, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; checking for: odour, temperature, corrosion, colour, vibration/ noise, pressure, diagnostic codes, and leaks, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5163.03 Repair fuel control systems and components**, such as: fuel, malfunction indicator lights (MIL), warning devices, sensors, wiring harnesses, modules, solenoids, relays, injectors, pumps, actuator modules, interfaces, data links, and fastening and mounting devices; by: exchanging, reconditioning, or servicing, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.04 Verify repair of fuel control systems and components**, such as: fuel, malfunction indicator lights (MIL), warning devices, sensors, wiring harnesses, modules, solenoids, relays, injectors, pumps, actuator modules, interfaces, data links, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized, and electronic service tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.05 Diagnose and troubleshoot ignition systems and components**, such as: system voltage, distributor components, coils, resistors, ignition modules, switches, sensors, wiring harnesses, ignition spark control, high tension wires, spark plugs, data links, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function, checking for: voltage, amperage, opens/shorts/grounds, diagnostic codes, resistance, pressure, temperature, corrosion and vibration/noise; using: hand, power, specialized, and electronic service, and precision measuring tools; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5163.06 Repair ignition systems and components**, such as: system voltage, distributor components, coils, resistors, ignition modules, switches, sensors, modules, wiring harnesses, ignition spark control, high tension wires, spark plugs, data links, and fastening and mounting devices, by: exchanging, reconditioning, or servicing, using: hand, power, specialized, electronic service and precision measuring tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.07 Verify repair of ignition systems and components**, such as: system voltage, distributor components, coils, resistors, ignition modules, switches, sensors, modules, wiring harnesses, ignition spark control, high tension wires, spark plugs, data links, and fastening and mounting devices; by: visually inspecting, testing, analysing performance and function, using: hand, power, specialized, and electronic service and precision measuring tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.08 Diagnose and troubleshoot computer-controlled systems and components**, such as: system voltage, module programming, sensors, fuses, fusible links, wiring harnesses, data links, modules, drivers, and fastening and mounting devices, by: visually inspecting, testing, and analysing performance and function, checking for: temperature, corrosion, diagnostic codes, and vibration/noise; using hand, power, specialized, electronic service and precision measuring tools; according to manufacturer's recommendations, specifications, schematic diagrams, safety requirements, and the Society of Automotive Engineers (SAE) On-Board Diagnostics (OBD) standards.

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**5163.09 Repair computer-controlled systems and components**, such as: system voltage, module programming, actuators, sensors, modules, circuit protection devices, wiring harnesses, connectors, and fastening and mounting devices, by: exchanging, reconditioning, or servicing; using: hand, power, specialized, and electronic service and precision measuring tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.10 Verify repair of computer-controlled systems and components**, such as: system voltage, module programming, actuators, sensors, modules, circuit protection devices, wiring harnesses, connectors, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function, using: specialized, electronic service and precision measuring tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.11 Perform gasoline engine service**, by: testing compression/vacuum, and checking and/or replacing spark plugs, air filters and intake systems, high-tension wires, exhaust restriction, distributor components, fuel filters, and positive crankcase ventilation (PCV) valves; timing control, governors, idle speed, and emission control devices; using: hand, power, specialized, and electronic service tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.12 Perform electronic diesel engine service**, by: testing compression and checking and/or replacing: fuel filters, air filters and intake system components, exhaust restriction, manifold boost pressure, electrical system and valve adjustment, such as: electronic unit injectors (EUI), and electronic unit pump (EUP); checking and/or adjusting injection timing, idle speed, and emission control devices; using: hand, power, specialized, and electronic service tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5163.13 Perform mechanical diesel engine service**, by: checking and/or replacing: fuel and air filters, intake system components, exhaust restriction, manifold boost pressure and controls, and valve adjustment, such as: mechanical unit injectors, valves, pressure-time injectors, and injection pump static timing; testing and reconditioning injectors, fuel return system, distributor pumps, glow plugs, and pre-heat systems; using: hand, power, specialized, and electronic service tools; according to manufacturer's recommendations, specifications and safety requirements.

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**SPONSOR CONFIRMATION FOR U5163: ENGINE MANAGEMENT SYSTEMS**

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**U5164.0 ELECTRICAL SYSTEMS - BODY**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair electrical systems - body electrical; by: performing a visual inspection; diagnosing and troubleshooting body electrical and computer-controlled systems and components; repairing body electrical and computer-controlled systems and components; verifying repair of body electrical and computer-controlled systems and components; diagnosing and troubleshooting supplemental restraint systems (SRS) and components; repairing supplementary restraint systems (SRS) and components, verifying repair of supplementary restraint systems (SRS) and components, according to manufacturer's recommendations, specifications, and safety requirements.

**5164.01 Perform visual inspection**, identifying system types and applications, by: checking for worn, loose, damaged, missing, or defective components, such as: batteries, relays, boards/blocks, connectors, cables, sensors, wiring harnesses, modules, lighting/illumination, circuit protection and theft-deterrent devices, electrical accessories, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5164.02 Diagnose and troubleshoot body electrical and computer-controlled systems and components**, such as: batteries, boards/blocks, cables, connectors, display panels, switches, relays, solenoids, motors, sensors, modules, wiring harnesses, data links, proximity warning devices, buzzers, auditory alarms, diagnostic lights, lighting/illumination, circuit protection, theft-deterrent devices, electrical accessories, and fastening and mounting devices; by: visually inspecting, testing, testing programming, re-programming, and analysing performance and function; checking for: opens/shorts/grounds, corrosion, vibration/noise, and parasitic draw; using: hand, power, specialized, electrical service and precision measuring tools; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5164.03 Repair body electrical and computer-controlled systems and components**, such as: batteries, boards/blocks, cables, connectors, display panels, switches, relays, solenoids, motors, sensors, modules, wiring harnesses, data links, proximity warning devices, buzzers, auditory alarms, diagnostic lights, lighting/illumination, circuit protection, theft-deterrent devices, electrical accessories, and fastening and mounting devices, by: exchanging, reconditioning, or servicing; using: hand, power, electronic service, specialized and precision measuring tools; according to manufacturer's recommendations, specifications, and safety requirements.

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**5164.04 Verify repair of body electrical and computer-controlled systems and components**, such as: batteries, boards/blocks, cables, connectors, display panels, switches, relays, solenoids, motors, sensors, modules, wiring harnesses, data links, proximity warning devices, buzzers, auditory alarms, diagnostic lights, lighting/illumination, circuit protection, theft-deterrent devices, electrical accessories, and fastening and mounting devices; by: visually inspecting, testing, testing programming and analyzing performance and function; using: hand, power, electronic service, specialized and precision measuring tools; according to manufacturer's recommendations, specifications, and safety requirements.

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**5164.05 Diagnose and troubleshoot supplemental restraint systems (SRS) and components**, such as: batteries, air bag assemblies, activating and shorting devices, sensors, modules, wiring harnesses, and fastening and mounting devices; by visually inspecting, testing, and analyzing performance and function; using: hand, power, electronic service, and specialized service tools; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5164.06 Repair supplemental restraint systems (SRS) and components**, such as: batteries, air bag assemblies, activating and shorting devices, sensors, modules, wiring harnesses, and fastening and mounting devices, by: exchanging; using: hand, power, electronic service, and specialized kits and tools; according to manufacturer's recommendations, specifications, and safety requirements.

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**5164.07 Verify repair of supplemental restraint system (SRS) and components**, such as: batteries, air bag assemblies, activating and shorting devices, sensors, modules, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power, electronic service, and specialized kits and tools; according to manufacturer's recommendations, specifications, and safety requirements.

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**SPONSOR CONFIRMATION FOR U5164: ELECTRICAL SYSTEMS - BODY**

| Date Completed (mm/dd/yy) | Sponsor Name (Print) | Sponsor Signature |
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**U5165.0 FUEL DELIVERY SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair fuel delivery systems, by: performing a visual inspection; diagnosing and troubleshooting gasoline fuel systems and components; repairing gasoline fuel systems and components; verifying repair of gasoline fuel systems and components; diagnosing and troubleshooting diesel fuel systems and components, repairing diesel fuel systems and components, and verifying repair of diesel fuel systems and components, according to manufacturer's recommendation, specification, and safety requirements.

**5165.01 Perform visual inspection**, identifying system types and applications, by: checking for: worn, loose, damaged, leaking, missing, or defective components, such as: pumps, injectors, routing of lines and hoses, fittings, filters, vents, tanks, heaters, sensors, modules, wiring harnesses, throttle actuation systems, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5165.02 Diagnose and troubleshoot gasoline fuel systems and components**, such as: fuel, tanks, vents, pumps, filters, routing of lines and hoses, fittings, switches, solenoids, relays, sensors, modules, wiring harnesses, pressure control mechanisms, linkages, accumulators, fuel injectors, throttle actuation systems, gauges, and fastening and mounting devices, by: visually inspecting, testing, and analysing performance and function; checking for: odour, temperature, corrosion, vibration/noise, pressure, leaks, flow, and fuel condition; using: hand, power, specialized, and electronic service tools, vacuum and pressure gauges; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5165.03 Repair gasoline fuel systems and components**, such as: fuel, tanks, vents, pumps, filters, routing of lines and hoses, fittings, switches, solenoids, relays, sensors, modules, wiring harnesses, pressure control mechanisms, linkages, accumulators, fuel injectors, throttle actuation systems, gauges, and fastening and mounting devices; by: exchanging, reconditioning, or servicing, using: hand, power, electronic service, and specialized tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5165.04 Verify repair of gasoline fuel systems and components**, such as: fuel, tanks, vents, pumps, filters, routing of lines and hoses, fittings, switches, solenoids, relays, sensors, modules, wiring harnesses, pressure control mechanisms, linkages, accumulators, fuel injectors, throttle actuation systems, gauges, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power, electronic service, and specialized tools; according to manufacturer's recommendations, specifications and safety requirements.

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**5165.05 Diagnose and troubleshoot diesel fuel systems and components**, such as: fuel, tanks, lines, fittings, filters, heaters, valves, injection pressure and transfer pumps, linkages, cables, hydraulic injectors, electronic and mechanical unit injectors, sensors, modules, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; checking for: odour, temperature, colour, corrosion, noise, fuel condition, and leaks; using: pressure and vacuum gauges, hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5165.06 Repair diesel fuel systems and components**, such as: fuel, tanks, hoses and lines, fittings, filters, heaters, valves, injection pressure pumps, linkages, cables, hydraulic injectors, electronic and mechanical unit injectors, sensors, modules, wiring harnesses, and fastening and mounting devices; by: exchanging, reconditioning, servicing, or programming; using: hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5165.07 Verify repair of diesel fuel systems and components**, such as: fuel, tanks, hoses and lines, fittings, filters, heaters, valves, injection pressure pumps, linkages, cables, hydraulic injectors, electronic and mechanical unit injectors, sensors, modules, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, testing programming, and analysing performance and function; using: hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| <b>SPONSOR CONFIRMATION FOR U5165: FUEL DELIVERY SYSTEMS</b> |                      |                   |
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| Date Completed (mm/dd/yy)                                    | Sponsor Name (Print) | Sponsor Signature |

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**U5166.0 TRANSMISSION SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair transmission systems, by: performing a visual inspection; diagnosing and troubleshooting clutch systems and components; repairing clutch systems and components; verifying repair of clutch system and components, diagnosing and troubleshooting manual transmissions/transaxles, and components; repairing manual transmissions/transaxles, and components; verifying repair of manual transmissions/transaxles and components; diagnosing and troubleshooting automatic transmissions/transaxles, and components; repairing automatic transmissions/transaxles, and components; diagnosing and troubleshooting computer-controlled systems and components; repairing computer-controlled systems and components; verifying repair of computer-controlled system and components; diagnosing and troubleshooting transfer cases and components, repairing transfer cases and components, and verifying repair of transfer cases and components, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5166.01 Perform visual inspection**, identifying system types and applications, by: checking for: worn, loose, damaged, leaking, missing, or defective components, such as: housings, shafts, gears, bearings, seals, bushings, linkages, cables, controls, actuators, clutches, pressure plates, flywheels, sensors, modules, wiring harnesses, fluids/lubricants, coolers, power take-off units (PTO), pumps, filters, level indicators, tubes, yokes, flanges, data displays, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5166.02 Diagnose and troubleshoot clutch systems and components**, such as: pressure plate assemblies, friction materials, cables, linkages, release mechanisms, bearings, hydraulic cylinders, lines, fluids, flywheel assemblies, pilot bearings, input (pilot) shafts, intermediate plates, drive mechanisms, switches, solenoids, sensors, concentric alignment, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; checking for: odour, temperature, corrosion, contamination, vibration/noise, colour, fluid level/condition, pressure, free play, internal adjustments, slippage, disengagement and dragging; using: hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5166.03 Repair clutch systems and components**, such as: pressure plate assemblies, friction materials, cables, linkages, release mechanisms, bearings, hydraulic cylinders, lines, fluids, flywheel assemblies, pilot bearings, input (pilot) shafts, intermediate plates, drive mechanisms, switches, solenoids, sensors, concentric alignment, and fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5166.04 Verify repair of clutch systems and components**, such as: pressure plate assemblies, friction materials, cables, linkages, release mechanisms, bearings, hydraulic cylinders, lines, fluids, flywheel assemblies, pilot bearings, input (pilot) shafts, intermediate plates, drive mechanisms, switches, solenoids, sensors, concentric alignment, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power, electronic service, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5166.05 Diagnose and troubleshoot manual transmission/transaxle and components,** such as: housings, gear trains, synchronizers, differentials, shift mechanisms, power take-off (PTO) units, alignment, sensors, modules, switches, bearings, seals, lubrication systems, wiring harnesses, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function, checking for: odour, temperature, corrosion, colour, fluid level/condition, leaks, vibration/noise, wear, and gear clash; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5166.06 Repair manual transmissions/transaxles and components,** such as: housings, gear trains, synchronizers, differentials, shift mechanisms, power take-off (PTO) units, alignment, sensors, modules, switches, bearings, seals, lubrication systems, wiring harnesses, and fastening and mounting devices; by: exchanging, reconditioning, or servicing, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5166.07 Verify repair of manual transmissions/transaxles and components,** such as: housings, gear trains, synchronizers, differentials, shift mechanisms, power take-off (PTO) units, alignment, sensors, modules, switches, bearings, seals, lubrication systems, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5166.08 Diagnose and troubleshoot automatic transmissions/transaxles and components,** such as: housings, oils, differentials, power take-off (PTO) units, torque converter assemblies, modulators/throttles, solenoids, sensors, modules, wiring harnesses, valve bodies, gear trains, shafts, bearings, seals, clutch packs, one-way clutches, band and servo assemblies, data links, diagnostic lights and codes, and fastening and mounting devices; by: stall testing, and analysing performance and function, checking for: odour, temperature, slippage, shift points and quality, vibration/noise, corrosion, colour, fluid level/condition, leaks, contamination, pressure, alignment and wear; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5166.09 Repair automatic transmissions/transaxles and components,** such as: housings, oils, differentials, power take-off (PTO) units, torque converter assemblies, modulators/throttles, solenoids, sensors, modules, wiring harnesses, valve bodies, clutch packs, one-way clutches, band and servo assemblies, data links, diagnostic lights and codes, and fastening and mounting devices; by: exchanging, reconditioning, or servicing, using hand, power, specialized, electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications and safety requirements.

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**5166.10 Verify repair of automatic transmissions/transaxles and components,** such as: housings, oils, differentials, power take-off (PTO) units, torque converter assemblies, modulators/throttles, solenoids, sensors, modules, wiring harnesses, valve bodies, clutch packs, one-way clutches, band and servo assemblies, data links, diagnostic lights and codes, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function; using: hand, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications and safety requirements.

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**5166.11 Diagnose and troubleshoot computer-controlled transmissions/transaxles systems and components**, such as: diagnostic codes, warning devices, relays, solenoids, sensors, modules, wiring harnesses, controls, actuators, data links, and fastening and mounting devices, by: visually inspecting, testing, and analysing performance and function, checking for: colour, temperature, vibration/noise, and corrosion, using: hand, power, specialized, and electronic service tools; according to manufacturer=s recommendations, specifications, schematic diagrams, and safety requirements.

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**5166.12 Repair computer-controlled transmissions/transaxles systems and components**, such as: warning devices, relays, solenoids, sensors, modules, wiring harnesses, controls, actuators, data links, and fasteners and mounting hardware; by: replacing module, data reprogramming, or servicing; using: hand, specialized, and electronic service tools; according to manufacturer’s recommendations, specifications and safety requirements.

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**5166.13 Verify repair of computer-controlled transmissions/transaxles systems and components**, such as: warning devices, relays, solenoids, sensors, modules, wiring harnesses, controls, actuators, data links, and fasteners and mounting hardware; by: visually inspecting, testing, and analysing performance and function; using: hand, specialized, and electronic service tools; according to manufacturer’s recommendations, specifications and safety requirements.

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**5166.14 Diagnose and troubleshoot transfer cases and components**, such as: housings, linkages, bearings, seals, gear trains, locking devices, viscous couplings, lubrication systems, warning devices, relays, solenoids, controls, actuators, sensors, wiring harnesses, modules, information/warning displays, data links, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function, checking for: temperature, colour, fluid level/condition, leaks, odour, vibration/noise, corrosion, and diagnostic codes; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer’s recommendations, specifications, schematic diagrams, and safety requirements.

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**5166.15 Repair transfer cases and components**, such as: housings, linkages, bearings, seals, gear trains, locking devices, viscous couplings, lubrication systems, warning devices, relays, solenoids, controls, actuators, sensors, wiring harnesses, modules, information/warning displays, data links, and fastening and mounting devices, by: exchanging, reconditioning, or servicing, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5166.16 Verify repair of transfer cases and components**, such as: housings, linkages, bearings, seals, gear trains, locking devices, viscous couplings, lubrication systems, warning devices, relays, solenoids, controls, actuators, sensors, wiring harnesses, modules, information/warning displays, data links, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**SPONSOR CONFIRMATION FOR U5166: TRANSMISSION SYSTEMS**

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**U5167.0 DRIVE SHAFTS, DIFFERENTIALS, AND DRIVE AXLE ASSEMBLIES**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair drive shafts, differentials, and drive axle assemblies, by: performing a visual inspection; diagnosing and troubleshooting drive shaft, differential and drive assemblies, and components, repairing drive shafts, differential, drive assemblies, and components, and verifying repair of drive shafts, differential, drive assemblies, and components, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5167.01 Perform visual inspection**, identifying system types and applications, by: checking for: worn, loose, damaged, leaking, missing, or defective components, such as: drive shafts, universal and constant velocity (CV) joint assemblies, hanger bearing and locking hub assemblies, lubrication systems, flanges, yokes, housings, vents, carriers, differentials, axle shafts, gear sets, bearings, seals, wheel end assemblies, controls, actuators, sensors, and wiring harnesses, and fastening and mounting devices; according to manufacturer’s recommendations, specifications, and safety requirements.

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**5167.02 Diagnose and troubleshoot drive shafts, differentials, drive axle assemblies, and components**, such as: housings, vents, hanger bearing assemblies, flanges, yokes, carriers, differentials, universal and constant velocity (CV) joints, axle shafts, bearings, seals, locking hub assemblies, controls, actuators, sensors, modules, wiring harnesses, fluids/lubricants, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, checking for: wear, temperature, colour, fluid level/condition, tolerances, vibration/noise, leaks, gear clash, run out, phasing, and corrosion; using: hand, power, contamination, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer’s recommendations, specifications, and safety requirements.

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**5167.03 Repair drive shafts, differentials, drive axle assemblies, and components**, such as: housings, vents, hanger bearing assemblies, flanges, yokes, carriers, differentials, universal and constant velocity (CV) joints, axle shafts, bearings, seals, locking hub assemblies, controls, actuators, sensors, modules, wiring harnesses, fluids/lubricants, and fastening and mounting devices; by: reconditioning, exchanging, or servicing, using: hand, power, specialized, and electronic service tools; according to manufacturer’s recommendations, specifications, and safety requirements.

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**5167.04 Verify repair of drive shafts, differentials, drive axle assemblies, and components**, such as: housings, vents, hanger bearing assemblies, flanges, yokes, carriers, differentials, universal and constant velocity (CV) joints, axle shafts, bearings, seals, locking hub assemblies, controls, actuators, sensors, modules, wiring harnesses, fluids/lubricants, and fastening and mounting devices; by: visually inspecting, testing, analyzing performance and function; using: hand, power, specialized, and electronic service tools; according to manufacturer’s recommendations, specifications, and safety requirements.

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| <b>SPONSOR CONFIRMATION FOR U5167: DRIVE SHAFTS, DIFFERENTIALS, AND DRIVE AXLE ASSEMBLIES</b> |  |  |
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**U5168.0      SUSPENSION SYSTEMS AND FRAMES**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair suspension systems and frames, by: performing a visual inspection; diagnosing and troubleshooting suspension systems and components; repairing suspension systems, frames/sub-frames, and components, and verifying repair of suspension systems, frames/sub-frames and components, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5168.01      Perform visual inspection**, identifying system types and applications, by checking for: worn, loose, missing, leaking, damaged, or defective components; such as: frames/sub-frames, control arms, shock absorbers, springs (leaf, rubber block, air, and torsion bar), equalizers, shackles, bushings, active and air suspension, electronic level controls, strut assemblies, sway bars, hangers, lines, fittings, gauges, valves, controls, radius/torque rods, controls, actuators, sensors, modules, data links, wiring harnesses, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journey person (Signature) | _____<br>College of Trades Member I.D.# |
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**5168.02 Diagnose and troubleshoot suspension systems, frames/sub-frames and components**, such as: frames/sub-frames, control arms, shock absorbers, springs (leaf, rubber block, air, and torsion bar), equalizers, shackles, bushings, active and air suspension, electronic level controls, strut assemblies, sway bars, hangers, lines, valves, controls, radius/torque rods, controls, actuators, sensors, modules, information/warning displays, data links, wiring harnesses, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function, checking for: vibration/noise, corrosion, fractures, leaks, pressure, colour, alignment, stability, ride height, load distribution, controls, and diagnostic codes; using: hand, power, and specialized electronic service tools, and lifting, rigging, and blocking devices, according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5168.03 Repair suspension systems, frames/sub-frames and components**, such as: control arms, shock absorbers, springs (leaf, rubber block, air, and torsion bar), equalizers, shackles, bushings, active and air suspension, electronic level controls, strut assemblies, sway bars, hangers, lines, fittings, valves, controls, radius/torque rods, controls, actuators, sensors, modules, information/warning displays, data links, wiring harnesses, and fastening and mounting devices, by: exchanging, reconditioning, aligning, or servicing, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices, and heating, welding and cutting equipment; according to manufacturer's recommendations, specifications, and safety requirements.

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**5168.04**      **Verify repair of suspension systems, frames/sub-frames, and components**, such as: control arms, shock absorbers, springs (leaf, rubber block, air, and torsion bar), equalizers, shackles, bushings, active and air suspension, electronic level controls, strut assemblies, sway bars, hangers, lines, fittings, valves, controls, radius/torque rods, controls, actuators, sensors, modules, information/warning displays, data links, wiring harnesses, and mounting hardware, by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| <b>SPONSOR CONFIRMATION FOR U5168: SUSPENSION SYSTEMS AND FRAMES</b> |
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**U5169.0      STEERING SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair steering systems, by: performing a visual inspection; diagnosing and troubleshooting steering systems and components; repairing steering systems and components, verifying repair of steering systems and components, and aligning steering axles and suspensions, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5169.01      Perform visual inspection**, identifying system types, such as: manual, electric/hydraulic assist and applications; by: checking for: oil level/condition, leaking, worn, loose, defective, or missing components, such as: pumps and drive mechanisms, cylinders, reservoirs, valves, controls, fittings, lines, hoses, seals, gaskets, steering boxes/racks/motors, linkages, tie rod ends, seals, bearings, bushings, guides, variable assist systems, column assemblies, ball joints, transfer boxes, switches, relays, sensors, modules, wiring harnesses, diagnostic codes, information/warning displays, data links, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5169.02      Diagnose and troubleshoot steering systems and components**, such as: pumps, drive mechanisms, cylinders, reservoirs, valves, controls, lines, fittings, hoses, steering boxes/racks/motors, linkages, tie rod ends, seals, gaskets, bearings, bushings, guides, variable assist systems, column assemblies, ball joints, transfer boxes, switches, relays, sensors, modules, wiring harnesses, information/warning displays, data links, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, checking for: odour, temperature, colour, alignment, vibration/noise, corrosion, fluid type, contamination, pressure, leaks, flow, and diagnostic codes; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5169.03 Repair steering systems and components**, such as: pumps, drive mechanisms, cylinders, reservoirs, valves, controls, lines, fittings, hoses, steering boxes/racks/motors, linkages, tie rod ends, seals, gaskets, bearings, bushings, guides, variable assist systems, column assemblies, ball joints, transfer boxes, switches, relays, sensors, modules, wiring harnesses, information/warning displays, data links, and fastening and mounting devices, by: exchanging, reconditioning, aligning, or servicing; using: hand, power, specialized, and electronic service tools, alignment equipment , lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5169.04 Verify repair of steering systems and components**, such as: pumps, drive mechanisms, cylinders, reservoirs, valves, controls, lines, fittings, hoses, steering boxes/racks/motors, linkages, tie rod ends, seals, gaskets, bearings, bushings, guides, variable assist systems, column assemblies, ball joints, transfer boxes, switches, relays, sensors, modules, wiring harnesses, information/warning displays, data links, and fastening and mounting devices, by: visually inspecting, testing, and analysing performance and function; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5169.05 Align steering, axles, and suspensions**, by: adjusting alignment geometry, and verifying, using alignment equipment, hand, power, specialized, and electronic service tools; according to manufacturer's recommendation, specification and safety requirements.

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**SPONSOR CONFIRMATION FOR U5169: STEERING SYSTEMS**

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**U5170.0 BRAKING SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair braking systems by: performing a visual inspection; diagnosing and troubleshooting hydraulic braking systems and components; repairing hydraulic braking systems and components; verifying repair of hydraulic braking systems and components, diagnosing and troubleshooting anti-lock braking systems and components; repairing anti-lock braking systems and components, and verifying repair of anti-lock braking system and components; diagnosing and troubleshooting anti-skid/traction control systems and components; repairing anti-skid/traction control systems and components, and verifying repair of anti-skid/traction control systems and components; diagnosing and troubleshooting stability control systems and components; repairing stability control systems and components; measuring and resurfacing brake drums, linings, and rotors, according to manufacturer’s recommendations, specifications, and safety requirements.

**SKILLS**

**5170.01 Perform visual inspection**, identifying system types and applications, by: checking for: hydraulic fluid level/condition, worn, loose, missing, or damaged components, such as: drums, callipers, rotors, backing plates, dust shields, friction material, hoses, lines, routing, mounting hardware, bushings, slack adjusters, valves, brake chambers, wheel and master cylinders, boosters, switches, relays, sensors, modules, wiring harnesses, safety devices, anti-lock brake systems (ABS), anti-skid/traction and stability control systems, information/warning displays, and data links; according to manufacturer's recommendations, specifications, and safety requirements.

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**5170.02 Diagnose and troubleshoot hydraulic braking systems and components**, such as: drums, calipers, rotors, friction materials, backing plates, routing of hoses and lines, valves, master and wheel cylinders, fluids, boosters, actuators, switches, relays, sensors, wiring harnesses, valves, safety devices, information warning displays, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; checking for: wear, vibration/noise, pressure, corrosion, colour, fluid level/condition, leaks, contamination, and temperature; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5170.03 Repair hydraulic braking systems and components**, such as: drums, calipers, rotors, friction materials, backing plates, routing of hoses and lines, valves, master and wheel cylinders, fluids, boosters, actuators, switches, relays, sensors, wiring harnesses, valves, safety devices, information warning displays, and fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5170.04 Verify repair of hydraulic braking systems and components**, such as: drums, calipers, rotors, friction materials, backing plates, routing of hoses and lines, valves, master and wheel cylinders, fluids, boosters, actuators, switches, relays, sensors, wiring harnesses, valves, safety devices, information warning displays, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5170.05 Diagnose and troubleshoot anti-lock braking systems (ABS), traction and stability control systems and components**, such as: fluids, boosters, accumulators, actuators, switches, solenoids, relays, wheel speed sensors, reluctors, motors, pumps, actuators, reservoirs, modules, wiring harnesses, valves, safety devices, information warning displays, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; checking for: opens/shorts/grounds, vibration/noise, pressure, corrosion, colour, fluid level/condition, leaks, contamination, and temperature; using hand, power, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer’s recommendations, specifications, schematic diagrams, and safety requirements.

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**5170.06 Repair anti-lock braking systems (ABS), traction and stability control systems and components**, such as: routing of hoses and lines, valves, accumulators, actuators, switches, solenoids, relays, sensors, rotor sensors, motors, pumps, reservoirs, reluctors, modules, wiring harnesses, valves, safety devices, information warning displays, and fastening and mounting devices; by: exchanging, reconditioning, or servicing, using: hand, power, and specialized tools, and lifting, rigging, and blocking devices; according to manufacturer’s recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | Journey person (Signature) | College of Trades Member I.D.# |
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**5170.07 Verify repair of anti-lock braking systems (ABS), traction and stability control systems and components**, such as: routing of hoses and lines, valves, fluids, accumulators, actuators, switches, solenoids, relays, sensors, rotor sensors, motors, pumps, reservoirs, reductors, modules, wiring harnesses, valves, safety devices, information warning displays, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
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**5170.08 Diagnose and troubleshoot anti-skid/traction control systems and components**, such as: drums, calipers, rotors, backing plates, friction materials, hoses, lines, valves, master and wheel cylinders, switches, solenoids, relays, boosters, sensors, modules, accumulators, motors, pumps, actuators, reservoirs, reductors, wiring harnesses, information/warning displays, safety devices, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; checking for: opens/shorts/grounds, vibration/noise, pressure, corrosion, colour, leaks, contamination, fluid level/condition and temperature, routing of hoses and lines, using hand, power, specialized and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
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**5170.09 Repair anti-skid/traction control systems and components**, such as: drums, calipers, rotors, backing plates, friction materials, hoses, lines, routing, valves, master and wheel cylinders, boosters, switches, relays, solenoids, sensors, modules, accumulators, motors, pumps, actuators, reservoirs, reductors, wiring harnesses, information/warning displays, safety devices, and fastening and mounting devices; by: exchanging, reconditioning and servicing; using: hand, power, and specialized electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

## AUTOMOTIVE SERVICE TECHNICIAN

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| (mm/dd/yy) | Apprentice (Signature)    | College of Trades Member I.D.# |

**5170.10 Verify repair of anti-skid/traction control systems and components**, such as: drums, calipers, rotors, backing plates, friction materials, hoses, lines, routing, valves, master and wheel cylinders, boosters, switches, relays, solenoids, sensors, modules, accumulators, motors, pumps, actuators, reservoirs, reductors, wiring harnesses, information/warning displays, safety devices, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices according to manufacturer's recommendations, specifications, and safety requirements.

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**5170.11 Measure and resurface brake drums, linings, and rotors**, by: using hand, power, electronic service and specialized tools and resurfacing equipment; according to manufacturer's recommendations, specifications, and safety requirements.

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### SPONSOR CONFIRMATION FOR U5170: BRAKING SYSTEMS

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| <b>Date Completed (mm/dd/yy)</b> | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |
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**U5171.0      TIRES, WHEELS, RIMS, AND HUBS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair tires, wheels, rims, and hubs, by: performing a visual inspection; diagnosing and troubleshooting tires and components; repairing tires and components, and verifying repairs to tires and components, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5171.01      Perform visual inspection, identifying system types and applications**, by: checking for: worn, loose, damaged, overheated, leaking, missing, or defective components, tire ratings and sizes, such as: tires, tubes, valves, caps, mounting arrangements, rims, hubs, bearings, seals, spacers, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5171.02      Diagnose and troubleshoot tires and components**, such as: tires, tubes, valves, stems, caps, wear indicators, mounting arrangements, rims, hubs, bearings, seals, spacers, flanges, and fastening and mounting devices, by: visually inspecting, testing, and analysing performance and function, checking for: corrosion, contamination, pressure, temperature, vibration/noise, lubrication, leaks, fractures, run-out, tire-matching and condition; using: hand, power, and specialized tools, balancing equipment, torque wrenches, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5171.03 Repair tires and components**, such as: tires, tubes, valves, stems, caps, wear indicators, mounting arrangements, rims, hubs, bearings, seals, spacers, flanges, fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, specialized and service tools, balancing equipment, safety cages, torque wrenches, heating, welding and cutting equipment, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5171.04 Verify repair of tires and components**, such as: tires, tubes, valves, stems, caps, wear indicators, mounting arrangements, rims, hubs, bearings, seals, spacers, flanges, fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized, and electronic service tools, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5171.05 Balance tires and components**, using static and dynamic wheel balancers, weights, jacks, and safety stands; according to manufacturer's recommendations, specifications, and safety requirements.

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**SPONSOR CONFIRMATION FOR U5171: TIRES, WHEELS, RIMS, AND HUBS**

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| <b>Date Completed (mm/dd/yy)</b> | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |
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**U5172.0 HEATING, VENTILATION, AND AIR-CONDITIONING SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair heating, ventilation, and air-conditioning systems, by: performing a visual inspection; diagnosing and troubleshooting air-conditioning systems and components; repairing air-conditioning systems and components; verifying repair of air-conditioning systems and components; diagnosing and troubleshooting heating and ventilation systems and components, repairing heating and ventilation systems and components, and verifying repair of heating systems and components, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5172.01 Perform visual inspection**, identifying system types and applications, by checking for: worn, loose, damaged, leaking, missing, or defective components, such as: controls, actuators, cables, valves, switches, relays, sensors, modules, wiring harnesses, warning devices, compressors, drive mechanisms, motors, pumps, filters, lines, hoses, fittings, heat exchangers, auxiliary heaters/coolers, receiver/driers, accumulators, ducting, and fastening and mounting devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5172.02 Diagnose and troubleshoot air-conditioning systems and components**, such as: hoses, lines, fittings, controls, actuators, cables, valves, switches, relays, sensors, modules, wiring harnesses, modules, compressors, drive mechanisms, motors, pumps, filters, refrigerant, heat exchangers, receiver/dryers, accumulators, ducting, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function, checking for: opens/shorts/grounds, odour, colour, corrosion, temperature, contamination, vibration/noise, diagnostic codes, pressure, leaks, refrigerant type, quality and condition, using: hand, power specialized, electronic service tools, manifold gauge sets, and leak-detection devices; according to manufacturer's recommendations, specifications, schematic diagrams, safety requirements, and government regulations.

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**5172.03 Repair air-conditioning systems and components**, such as: hoses, lines, fittings, controls, actuators, cables, valves, switches, relays, sensors, modules, wiring harnesses, compressors, drive mechanisms, motors, pumps, filters, refrigerant, heat exchangers, receiver/dryers, accumulators, ducting, and fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power specialized, electronic service tools, manifold gauge sets, leak-detection devices, and refrigerant recovery and charge equipment, according to manufacturer's recommendations, specifications, safety requirements, and government regulations.

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**5172.04 Verify repair of air-conditioning systems and components**, such as: hoses, lines, fittings, controls, actuators, cables, valves, switches, relays, sensors, modules, wiring harnesses, modules, compressors and drive mechanisms, motors, pumps, filters, refrigerant, heat exchangers, receiver/dryers, accumulators, ducting, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power specialized, electronic service tools, manifold gauge sets, and leak-detection devices; according to manufacturer's recommendations, specifications, safety requirements, and government regulations.

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**5172.05 Diagnose and troubleshoot heating and ventilation systems and components**, such as: hoses, lines, fittings, controls, actuators, cables, valves, switches, relays, resistors, sensors, modules, circuit protection devices, wiring harnesses, warning devices, drive mechanisms, motors, pumps, filters, heat exchangers, ducting, and fasteners and mounting hardware; by: visually inspecting, testing, and analyzing performance and function, checking for: opens/shorts/grounds, odour, colour, corrosion, temperature, contamination, vibration/noise, pressure and leaks, fluid levels, types, and condition; using: hand, power, specialized, and electronic service tools, leak-detection devices, lifting, rigging and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, safety requirements, and government regulations.

## AUTOMOTIVE SERVICE TECHNICIAN

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
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**5172.06 Repair heating and ventilation systems and components**, such as: hoses, lines, fittings, controls, actuators, cables, valves, switches, relays, resistors, sensors, modules, circuit protection devices, wiring harnesses, warning devices, drive mechanisms, motors, pumps, filters, heat exchangers, ducting, fasteners and mounting devices; by: exchanging, replacing, or servicing; using: hand, power, specialized, and electronic service tools, leak-detection devices, lifting, rigging and blocking devices; according to manufacturer's recommendations, specifications, safety requirements, and government regulations.

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**5172.07 Verify repair of heating and ventilation systems and components**, such as: hoses, lines, fittings, controls, actuators, cables, valves, switches, relays, resistors, sensors, modules, circuit protection devices, wiring harnesses, warning devices, drive mechanisms, motors, pumps, filters, heat exchangers, ducting, and fasteners and mounting hardware; by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized, and electronic service tools, leak-detection devices, lifting, rigging and blocking devices; according to manufacturer's recommendations, specifications, safety requirements, and government regulations.

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### SPONSOR CONFIRMATION FOR U5172: HEATING, VENTILATION, AND AIR-CONDITIONING SYSTEMS

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| <b>Date Completed (mm/dd/yy)</b> | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |
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**U5173.0 BODY AND TRIM**

**GENERAL PERFORMANCE OBJECTIVE**

Diagnose and repair body and trim, by: performing a visual inspection; diagnosing and troubleshooting body and trim, repairing body and trim, and verifying repair of body and trim, according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5173.01 Perform visual inspection**, identifying system types and applications, by: checking for: worn, loose, damaged, leaking or missing components, such as: exterior body panels and trim, weather stripping, locks, hinges, latches, window regulator channels, trunk and hood supports, bumpers, hitches, anchoring devices, glass, lenses and housings, mirrors, antennae, sun roofs, convertible and t-roofs, adhesives, interior trim, carpets, panels, upholstery, roof lining, seats, hoods, fenders, trunks, doors, lighting assemblies, reinforcement bars, bumper shocks, electronic mirror controls, switches, solenoids, relays, sensors, modules, and occupant restraints systems; according to manufacturer’s recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | Journeyperson (Signature) | College of Trades Member I.D.# |
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**5173.02 Diagnose and troubleshoot body and trim**, such as: exterior body panels and trim, weather stripping, locks, hinges, latches, window regulator channels, trunk and hood supports, bumpers, hitches and anchoring devices, glass, lenses and housings, mirrors, antennae, sun roofs, convertible and t-roofs, adhesives, interior trim, carpets, panels, upholstery, roof linings, carpeting, seats, hoods, fenders, trunks, doors, lighting assemblies, reinforced bars, bumper shocks, electronic mirror controls, switches, solenoids, relays, sensors, modules, occupant restraints systems, latching mechanisms, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function, checking for: opens/shorts/grounds, vibration, corrosion, pressure, noise, and leaks; using: hand, power, specialized, electronic service tools; according to manufacturer’s recommendations, specifications, and safety requirements.

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**5173.03 Repair body and trim**, such as: exterior body panels and trim, weather stripping, locks, hinges, latches, window regulator channels, trunk and hood supports, bumpers, hitches and anchoring devices, glass, lenses and housings, mirrors, antennae, sun roofs, convertible and t-roofs, adhesives, interior trim, carpets, panels, upholstery, roof linings, carpeting, seats, hoods, fenders, trunks, doors, lighting assemblies, reinforced bars and bumper shocks, electronic mirror controls, switches, solenoids, relays, sensors, modules, occupant restraint systems, latching mechanisms, and fastening and mounting devices; by: exchanging, replacing, or servicing; using: hand, power, specialized, and electronic service tools; according to manufacturer’s recommendations, specifications, and safety requirements.

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**5173.04 Verify repair of body and trim**, such as: exterior body panels and trim, weather stripping, locks, hinges, latches, window regulator channels, trunk and hood supports, bumpers, hitches and anchoring devices, glass, lenses and housings, mirrors, antennae, sun roofs, convertible and t-roofs, adhesives, interior trim, carpets, panels, upholstery, roof linings, carpeting, seats, hoods, fenders, trunks, doors, lighting assemblies, reinforced bars, bumper shocks, electronic mirror controls, switches, solenoids, relays, sensors, modules, occupant restraint systems, latching mechanisms, and fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power, specialized, and electronic service tools; according to manufacturer’s recommendations, specifications, and safety requirements.

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**SPONSOR CONFIRMATION FOR U5173: BODY AND TRIM**

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| <b>Date Completed (mm/dd/yy)</b> | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |
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**U5174.0 EXHAUST, INTAKE, AND EMISSION CONTROL SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVES**

Diagnose and repair exhaust, intake, and emission systems and components, by: performing a visual inspection; diagnosing and troubleshooting exhaust and intake components; repairing exhaust and intake components; verifying the repair of exhaust and intake components; diagnosing and troubleshooting turbocharger/supercharger systems and components, repairing turbocharger/ supercharger systems and components, and verifying repair of turbocharger/ supercharger systems and components; diagnosing and troubleshooting Level I emission control systems and components; repairing Level I emission control systems and components; verifying repair of Level I emission control systems; diagnosing and troubleshooting Level II emission control systems and components; repairing Level II emission control systems and components, and verifying repair of Level II emission control systems and components; according to manufacturer’s recommendations, specifications, and safety requirements.

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**SKILLS**

**5174.01 Perform visual inspection**, identifying system types and applications, by: checking for: worn, loose, damaged, leaking, missing, or defective components, such as: manifolds, piping, gaskets, mufflers, catalytic converters, turbochargers/superchargers, heat shields, charge air coolers, particulate traps, filters, indicators, emission control devices, actuators, sensors, modules, and wiring harnesses, according to manufacturer's recommendations, specifications, and safety requirements.

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**5174.02 Diagnose and troubleshoot exhaust and intake systems and components**, such as: manifolds, piping, gaskets, seals, mufflers, heat shields, catalytic converters, resonators, filters, indicators, ducting, air pumps, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, checking for: odour, pressure, vibration/noise, and leaks; using: hand, power, specialized tools, gauges, manometers, vacuum gauges, infrared thermometers, exhaust gas analyzing equipment, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
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**5174.03 Repair exhaust and intake systems and components**, such as: manifolds, piping, gaskets, seals, mufflers, heat shields, catalytic converters, resonators, filters, indicators, ducting, air pumps, and fastening and mounting devices; by exchanging, reconditioning, or servicing; using: hand, power, specialized tools, gauges, lifting, heating, welding, and cutting equipment, rigging, blocking, and welding equipment; according to manufacturer's recommendations, specifications, and safety requirements.

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**5174.04 Verify repair of exhaust and intake systems and components**, such as: manifolds, piping, gaskets, seals, mufflers, heat shields, catalytic converters, resonators, filters indicators, ducting, air pumps, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized tools, gauges, manometers, vacuum gauges, infrared thermometers, and lifting, rigging, and blocking equipment; according to manufacturer's recommendations, specifications, and safety requirements.

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**5174.05 Diagnose and troubleshoot turbocharger/supercharger systems and components**, such as: housings, shafts, bearings, seals, turbines, waste gates, variable volume controls, manifold boost control devices, boost pressure sensors, piping, actuators, sensors, modules, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, checking for: opens/shorts/grounds, pressure, temperature, corrosion, lubrication, wear, leaks, and noise/vibration, using: hand, power, specialized, and electronic service tools, gauges, precision measuring instruments, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5174.06 Repair turbocharger/supercharger systems and components**, such as: housings, shafts, bearings, seals, turbines, waste gates, variable volume controls, manifold boost control devices, boost pressure sensors, piping, actuators, sensors, modules, wiring harnesses, and fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, specialized, and electronic service tools, gauges, and precision measuring instruments, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5174.07 Verify repair of turbocharger/supercharger systems and components**, such as: housings, shafts, bearings, seals, turbines, waste gates, variable volume controls, manifold boost control devices, boost pressure sensors, piping, actuators, sensors, modules, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized, and electronic service tools, gauges, and precision measuring instruments, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5174.08 Diagnose and troubleshoot emission control systems and components (Positive Crankcase Ventilation (PCV), Exhaust Gas Recirculation (EGR), Catalytic Converters and Evaporative Fuel Systems,** such as: PCV and EGR valves, tubing, hoses, evaporative fuel canisters, switches, solenoids, wiring harnesses, catalytic converters, and fastening and mounting devices, by: visually inspecting, testing, and analyzing performance and function, checking for: opens/shorts/grounds, colour, pressure, temperature, corrosion, wear, leaks, and noise/vibration, using: hand, power, specialized, and electronic service tools, gauges, precision measuring instruments, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

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**5174.09 Diagnose and troubleshoot emission control systems and components (Positive Crankcase Ventilation (PCV), Exhaust Gas Recirculation (EGR), Catalytic Converters and Evaporative Fuel Systems,** such as: PCV and EGR valves, tubing, hoses, evaporative fuel canisters, switches, solenoids, wiring harnesses, catalytic converters, and fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, specialized, and electronic service tools, gauges, precision measuring instruments, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

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**5174.10 Diagnose and troubleshoot emission control systems and components (Positive Crankcase Ventilation (PCV), Exhaust Gas Recirculation (EGR), Catalytic Converters and Evaporative Fuel Systems,** such as: PCV and EGR valves, tubing, hoses, evaporative fuel canisters, switches, solenoids, wiring harnesses, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, using: hand, power, specialized, and electronic service tools, gauges, precision measuring instruments, and lifting, rigging, and blocking devices, according to manufacturer's recommendations, specifications, and safety requirements.



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**5174.11 Diagnose and troubleshoot diesel emission control systems and components, (Exhaust Gas Recirculation (EGR), Diesel Particulate Control (DPC)), Diesel Exhaust Fluid),** such as: EGR valves, switches, solenoids, sensors, modules, wiring harnesses, thermostatic air cleaners and valves, and fastening and mounting devices, pre-heat devices (glow plugs), injection and monitoring systems; by: visually inspecting, testing, and analyzing performance and function, pressure, checking for: opens/shorts/grounds, temperature, corrosion, wear, leaks, noise, and vibration, using: hand, power, specialized, and electronic service tools, exhaust gas analyzing equipment, gauges, precision measuring instruments, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, schematic diagrams, and safety requirements.

|            |                            |                                |
|------------|----------------------------|--------------------------------|
| (mm/dd/yy) | Journey person (Signature) | College of Trades Member I.D.# |
| (mm/dd/yy) | Apprentice (Signature)     | College of Trades Member I.D.# |

**5174.12 Repair diesel emission control systems and components, (Exhaust Gas Recirculation (EGR), Diesel Particulate Control (DPC)), Diesel Exhaust Fluid,** such as: EGR valves, switches, solenoids, sensors, modules, wiring harnesses, pre-heat devices (glow plugs), injection and monitoring systems and fastening and mounting devices; by: exchanging, reconditioning, or servicing; using: hand, power, specialized, and electronic service tools, gauges, precision measuring instruments, exhaust gas analyzing equipment, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

|            |                            |                                |
|------------|----------------------------|--------------------------------|
| (mm/dd/yy) | Journey person (Signature) | College of Trades Member I.D.# |
| (mm/dd/yy) | Apprentice (Signature)     | College of Trades Member I.D.# |

**5174.13 Verify repair of diesel emission control systems and components, (Exhaust Gas Recirculation (EGR), Diesel Particulate Control (DPC)), Diesel Exhaust Fluid),** such as: EGR valves, switches, solenoids, sensors, modules, wiring harnesses, pre-heat devices (glow plugs), injection and monitoring systems, and fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function; using: hand, power, specialized, and electronic service tools, gauges, precision measuring instruments, exhaust gas analyzing equipment, and lifting, rigging, and blocking devices; according to manufacturer's recommendations, specifications, and safety requirements.

|            |                            |                                |
|------------|----------------------------|--------------------------------|
| (mm/dd/yy) | Journey person (Signature) | College of Trades Member I.D.# |
| (mm/dd/yy) | Apprentice (Signature)     | College of Trades Member I.D.# |

**SPONSOR CONFIRMATION FOR U5174: EXHAUST, INTAKE, AND EMISSION CONTROL SYSTEMS**

|                                  |                             |                          |
|----------------------------------|-----------------------------|--------------------------|
| <b>Date Completed (mm/dd/yy)</b> | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |
|----------------------------------|-----------------------------|--------------------------|

**U5175.0      HYBRID VEHICLE SYSTEMS**

**GENERAL PERFORMANCE OBJECTIVES**

Diagnose and repair hybrid systems and components by: performing a visual inspection; diagnosing and troubleshooting hybrid systems and components such as: cable switches, modules, cooling devices and protective devices; repairing hybrid systems and components, and verifying repair of hybrid systems and components.

**SKILLS**

**5175.01      Perform visual inspection, identifying system types and applications, by: checking for: worn, loose, damaged, leaking, missing, or defective components, such as: cable, switches, modules, cooling devices and protective devices**

|            |                                    |   |
|------------|------------------------------------|---|
| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5175.02      Diagnose and troubleshoot hybrid systems and components, such as: fastening and mounting devices; by: visually inspecting, testing, and analyzing performance and function, checking for: odour, diagnostic trouble codes pressure, vibration/noise, and leaks; using: hand, power, specialized hybrid tools, and recommendations, specifications, and safety requirements.**

|            |                                    |   |
|------------|------------------------------------|---|
| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5175.03 Repair hybrid systems and components**, such as: fastening and mounting devices; by exchanging, reconditioning, or servicing; using: hand, power, specialized hybrid tools, lifting, heating, welding, and cutting equipment, rigging, blocking, and welding equipment; according to manufacturer’s recommendations, specifications, and safety requirements.

|            |                                    |   |
|------------|------------------------------------|---|
| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

**5175.04 Verify repair of hybrid systems and components**, such as: fastening and mounting devices; by: visually inspecting, testing, and analysing performance and function; using: hand, power, specialized hybrid tools, gauges, lifting, rigging, and blocking equipment; according to manufacturer’s recommendations, specifications, and safety requirements.

|            |                                    |   |
|------------|------------------------------------|---|
| (mm/dd/yy) | _____<br>Journeyperson (Signature) | _____<br>College of Trades Member I.D.# |
| (mm/dd/yy) | _____<br>Apprentice (Signature)    | _____<br>College of Trades Member I.D.# |

| <b>SPONSOR CONFIRMATION FOR U5175: HYBRID VEHICLE SYSTEMS</b> |                             |                          |
|---|-----------------------------|--------------------------|
| <b>Date Completed (mm/dd/yy)</b>                              | <b>Sponsor Name (Print)</b> | <b>Sponsor Signature</b> |

## DEFINITIONS

### Apprentices Class

Individuals in this class:

- Hold one or more valid Registered Training Agreements with the Ministry of Training, Colleges and Universities in either compulsory or voluntary trades;
- Hold a valid statement of membership with the Ontario College of Trades in the Apprenticeship class;
- Are subject to any ratios or wage rates that have been set out in regulation for their trade(s);
- Can remain in this class until they receive their Certificate of Apprenticeship;
- Can hold themselves out as Apprentices.

### Certificate of Apprenticeship (C of A)

A certificate issued by the Minister of Training, Colleges and Universities to individuals who have demonstrated that they have completed an apprenticeship program in Ontario.

### Certificate of Qualification (C of Q)

A certificate issued by the Registrar on behalf of the College of Trades to a Journeyperson. A Certificate of Qualification will serve as proof of having met any testing/program requirements and membership in the College's Journeypersons Class.

### Competence

The ability of an individual to perform a skill repeatedly and without assistance in the workplace as set out in the Log Book.

### 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.

### Competent Person

A competent person is defined by the *Occupational Health and Safety Act* as being a person who:

- Is qualified because of their knowledge, training and experience to organize the work and its performance;
- Is familiar with the *Occupational Health and Safety Act* and its regulations that apply to the work; and has knowledge of any potential or actual danger to health or safety in the workplace.

### **Competent Worker**

A competent worker is defined by the *Occupational Health and Safety Act* as being a person who:

- Is qualified because of knowledge, training and experience to perform the work;
- Is familiar with the *Occupational Health and Safety Act* and with the provisions of the regulations that apply to the work; and
- Has knowledge of all potential or actual danger to health or safety in the work.

### **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 established by the College of Trades.

### **Sponsor of Record**

Refers to the Sponsor documented as being signatory to the current training agreement or contract. In order for a Sponsor to be considered for the training of Apprentices, they must identify that the workplace has qualified Journeypersons 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.

### **Incompetence**

According to the *Ontario College of Trades and Apprenticeship Act, 2009*, a member of the College of Trades may be found to be incompetent by the College Of Trades Discipline Committee if the Committee feels that the member has displayed a lack of knowledge, skill or disregard for another person's welfare while practising their trade. If this happens, the individual may be found unfit to practise their trade and their Statement of Membership/Certificate of Qualification may be revoked, suspended, or be subject to terms, conditions or limitations.

### **Journeyperson**

Compulsory Trades Journeyperson:

- Someone who holds a valid Certificate of Qualification in the trade and who is a member in good standing of the College of Trades Journeypersons Class for the same trade; or
- Someone who holds a valid Provisional Certificate of Qualification in the trade and who is a member in good standing of the College of Trades Journeypersons Class for the same trade.

Voluntary Trades Journeyperson:

- Someone who holds a valid Certificate of Qualification in the trade and who is a member in good standing of the College of Trades Journeypersons Class for the same trade; or
- Someone who holds a Certificate of Qualification in the trade that was issued by the Ministry of Training, Colleges and Universities prior to April 8, 2013 (membership in the College of Trades is not required in this scenario).

### **Journeyperson Candidates Class**

An individual who has completed an Ontario apprenticeship program (Certificate of Apprenticeship) in a voluntary or compulsory trade that has a Certificate of Qualification examination, but has not passed the Certificate of Qualification examination for their trade. There is a maximum time limit of one year to remain in the Journeyperson Candidates Class.

Individuals in this class:

- are subject to any ratios and/or wage rates that have been set out for their trade(s), if they practise a compulsory trade.
- Can continue to work legally in their trade if they are in a compulsory trade, as they prepare to write their examination (individuals in voluntary trades do not have to be members of the College of Trades to work legally); and can hold themselves out as Journeyperson Candidates (they are neither Apprentices nor Journeypersons).
- Can remain in this class for a maximum of one year or until they pass the Certificate of Qualification exam and become members of the Journeypersons class. However, they can only remain in this class for a maximum of one year. After one year they can move into the Tradespersons Class if they are in a voluntary trade. If they are in a compulsory trade and have been in the Journeyperson Candidates Class for one year, they can no longer work legally in that trade until they pass the Certificate of Qualification examination.

### **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.

### **OCTAA**

*Ontario College of Trades and Apprenticeship Act, 2009*

### **Optional Skill**

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

### **Ratios**

For up to date information regarding Journeyperson to Apprentice ratios, please visit:

[collegeoftrades.ca](http://collegeoftrades.ca)

### **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 successfully completing 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 skill described in the Log Book (note: does not mean the larger skill groups referred to in the Log Book as Skill Sets, Training Units, or General Performance Objectives, but the individual skills that make up those groups).

### **Skill Sets**

Group of individual skills found in the Log Book (may also be called Training Unit or General Performance Objective).

### **Skill Set Completion for Sponsors**

Listing for all skill sets and includes space for confirmation by Sponsor of record.

### **Supervisor**

An individual who oversees the performance of a task and oversees the actions or work of others.

### **Trade Board**

Under the *Ontario College of Trades and Apprenticeship Act, 2009*, the [College of Trades Appointments Council](#) (COTAC) may appoint a Trade Board for each designated trade, composed of Employee and Employer representatives from the industry. Trade Boards are responsible for advising and making recommendations to the College of Trades Divisional Boards on issues relating to their trade. When there is no appointed trade board for a trade, the respective sector Divisional Board will act as the default Trade Board for the trade.



**Tradespersons Class**

A Class of Membership for individuals who practise in a voluntary trade which may or may not have a Certificate of Qualification examination.

Individuals in this class:

Have been members of the Journeyperson Candidates Class or are not eligible for Journeyperson Candidates Class and have been assessed to have experience and/or qualifications that are equivalent to a Certificate of Apprenticeship in that trade

- Are preparing to write/have no plans to write/have not passed the available Certificate of Qualification exam for their trade(s);
- Can remain in this class indefinitely or until they pass the available Certificate of Qualification exam for their trade(s); and
- Can hold themselves out as tradespersons (they are neither apprentices nor journeypersons).

**Note:** Individuals in the Tradespersons Class are considered Journeypersons for the purpose of determining ratios for that trade.

**Trainer**

A qualified Trainer in a compulsory trade is a Journeyperson with a Certificate of Qualification. In a voluntary trade, a Trainer is an individual who is considered equivalent to a Journeyperson with a Certificate of Qualification.

## 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 join the Journeypersons class of members at the Ontario College of Trades 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](http://red-seal.ca)

You will write an Ontario-only examination when your trade is not designated as Red Seal trade in Ontario.

### Ontario's Exam Preparation Guide

[collegeoftrades.ca](http://collegeoftrades.ca)

#### Basic Examination Details for You to Know

You will have **up to four hours to write your examination**. If you need more time, you must ask for it when you schedule the examination, not on the day of your examination. You can leave the examination centre if you complete the examination in less than four hours.

You need a mark of 70% to pass.

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.

#### Scheduling Your Examination

The examination scheduling process is currently outlined in detail on the College of Trades website: [collegeoftrades.ca](http://collegeoftrades.ca)

#### Remember these 3 basic steps:

1. Confirm your eligibility to write the examination with the College of Trades.
2. Contact Client Services at the College of Trades to pay your examination fee.
3. Contact the local Ministry apprenticeship office to schedule your examination in their examination centre: <http://services.findhelp.ca/eo/tcu/appoff>

## **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 Ministry of Training, Colleges and Universities Apprenticeship Office immediately to update your sponsor record.
3. Please make sure you do record all of 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                 |  |
| Registered Training Agreement # |  |
| 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 (e.g. UXXXX)                                  |  |

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, please photocopy as needed or visit [collegeoftrades.ca](http://collegeoftrades.ca) and search Sponsor Record Form.***

**CHANGE OF SPONSOR RECORD #2**

| SPONSOR INFORMATION             |  |
|---------------------------------|--|
| Apprentice Name                 |  |
| Registered Training Agreement # |  |
| 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 (e.g. UXXXX)                                  |  |

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, please photocopy as needed or visit [collegeoftrades.ca](http://collegeoftrades.ca) and search Sponsor Record Form.***

**CHANGE OF SPONSOR RECORD #3**

| SPONSOR INFORMATION             |  |
|---------------------------------|--|
| Apprentice Name                 |  |
| Registered Training Agreement # |  |
| 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 (e.g. UXXXX)                                  |  |

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, please photocopy as needed or visit [collegeoftrades.ca](http://collegeoftrades.ca) and search Sponsor Record Form.***

## INSTRUCTIONS FOR APPRENTICESHIP PROGRAM COMPLETION (Appendix A)

Once an Apprentice has completed all the classroom training and on-the-job hours specified for the trade, and has acquired all the mandatory skills included in this Log Book:

1. The Apprentice and the Sponsor complete the Apprentice Completion Form and the Skill Set Completion for Sponsors Form located on the following pages.
2. They sign the forms and submit them to their local Ministry of Training, Colleges and Universities apprenticeship office. (To find the closest office, check the contact information at <http://services.findhelp.ca/eo/tcu/appoff> or call the Employment Ontario toll free number at (1-800-387-5656).
3. Since this trade is competency based, all mandatory skills in the training standard must be signed off. If the Sponsor is completing the Apprentice before the industry recommended training hours are done, Ministry 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 Ministry of Training, Colleges and Universities apprenticeship office by mail, fax, or email (as a scanned document), they should not include their Log Book; if they are presenting this form in person at the local apprenticeship office, they should bring their Log Book with them.

After Ministry 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 Ministry will issue a Certificate of Apprenticeship to the Apprentice.

The Ontario College of Trades will receive notification of this completion, and complete the individual's membership in the Apprentices class for the trade. If the Apprentice has completed a program in a compulsory trade, the College of Trades will automatically register the Apprentice as a member of the Journeyperson Candidates class so the Apprentice can continue to work legally for one year while preparing for the certification examination. If an apprentice completes their apprenticeship in a voluntary trade **and** there is no Certificate of Qualification exam, they can apply for membership in the Journeypersons Class at the Ontario College of Trades. If there is a Certificate of Qualification exam, they must write and pass the exam in order to enter the Journeypersons Class at the Ontario College of Trades.

For permission to schedule an exam once completion is confirmed by the Ministry, the individual must first contact the College of Trades Client Services Department at 647-847-3000 or toll free at 1-855-299-0028 to pay the certification examination fee.





## SKILL SET COMPLETION FOR SPONSORS (Appendix C)

*You will find the skill set numbers and titles in the Log Book'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<br>AUTHORITY SIGNATURE |
|-------------|--|--------------------------------|
| U5160       | OCCUPATIONAL HEALTH AND SAFETY PROCEDURES              |                                |
| U5161       | ENGINE SYSTEMS   |                                |
| U5162       | ELECTRICAL SYSTEMS - STARTING AND CHARGING             |                                |
| U5163       | ENGINE MANAGEMENT SYSTEMS                              |                                |
| U5164       | ELECTRICAL SYSTEMS - BODY                              |                                |
| U5165       | FUEL DELIVERY SYSTEMS                                  |                                |
| U5166       | TRANSMISSION SYSTEMS                                   |                                |
| U5167       | DRIVE SHAFTS, DIFFERENTIALS, AND DRIVE AXLE ASSEMBLIES |                                |
| U5168       | SUSPENSION SYSTEMS AND FRAMES                          |                                |
| U5169       | STEERING SYSTEMS                                       |                                |
| U5170       | BRAKING SYSTEMS  |                                |
| U5171       | TIRES, WHEELS, RIMS, AND HUBS                          |                                |
| U5172       | HEATING, VENTILATION, AND AIR-CONDITIONING SYSTEMS     |                                |
| U5173       | BODY AND TRIM  |                                |
| U5174       | EXHAUST, INTAKE, AND EMISSION CONTROL SYSTEMS          |                                |
| U5175       | HYBRID VEHICLE SYSTEMS                                 |                                |

**MINISTRY OF TRAINING, COLLEGES AND UNIVERSITIES 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 \_\_\_\_\_

**MINISTRY OF TRAINING, COLLEGES AND UNIVERSITIES  
APPRENTICESHIP OFFICES IN ONTARIO (Appendix D)**

| <b>Location</b>                                  | <b>Contact</b>   | <b>Location</b>                                | <b>Contact</b>  |
|--|--|--|---|
| <b>Barrie</b><br>705-737-1431                    | 55 Cedar Pointe Dr Unit 609,<br>Barrie, ON L4N 5R7                                   | <b>North Bay</b><br>705-495-8515               | 200 First Ave West, North Bay, ON<br>P1B 3B9  |
| <b>Belleville</b><br>613-968-5558                | 135 North Front St, Belleville,<br>ON K8P 3B5  | <b>Ottawa</b><br>613-731-7100                  | Preston Square, 347 Preston St<br>3rd Flr, Ottawa, ON K1S 3H8                               |
| <b>Brantford</b><br>519-756-5197                 | 505 Park Rd North Suite 201,<br>Brantford, ON N3R 7K8                                | <b>Owen Sound</b><br>519-376-5790              | 1450 1st Ave West Suite 100,<br>Owen Sound, ON N4K 6W2                                      |
| <b>Chatham</b><br>519-354-2766                   | 870 Richmond St West 1st<br>Floor, Chatham, ON N7M 5J5                               | <b>Pembroke</b><br>613-735-3911                | 615 Pembroke St East, Pembroke, ON<br>K8A 3L7   |
| <b>Cornwall</b><br>613-938-9702                  | 132 Second St East Ste 202,<br>Cornwall, ON K6H 1Y4                                  | <b>Peterborough</b><br>705-745-1918            | 901 Lansdowne St West,<br>Peterborough, ON K9J 1Z5  |
| <b>Dryden</b><br>807-223-4632                    | Provincial Government<br>Building, 479 Government St,<br>Dryden, ON P8N 3K9          | <b>Pickering<br/>(City of)</b><br>905-837-7721 | 1420 Bayly St Unit 1, Pickering, ON<br>L1W 3R4  |
| <b>Elliot Lake</b><br>705-848-4661               | 50 Hillside Dr North, Elliot<br>Lake, ON P5A 1X4                                     | <b>Sarnia</b><br>519-542-7705                  | Bayside Mall, 150 Christina St North,<br>Sarnia, ON N7T 7W5                                 |
| <b>Fort Frances</b><br>807-274-8634              | 922 Scott St 2nd Flr, Fort<br>Frances, ON P9A 1J4                                    | <b>Sault Ste. Marie</b><br>705-945-6815        | 477 Queen St East 4th Flr, Sault Ste<br>Marie, ON P6A 1Z5                                   |
| <b>Hamilton<br/>Central</b><br>905-521-7764      | Ellen Fairclough Bldg, 119 King<br>St West 8th Flr, Hamilton, ON<br>L8P 4Y7          | <b>St Catharines</b><br>905-704-2991           | Garden City Tower, 301 St Paul St 10th<br>Flr, St Catharines, ON L2R 7R4                    |
| <b>Kapuskasing</b><br>705-337-4381               | Ontario Government Complex,<br>122 Government Rd West,<br>Kapuskasing, ON P5N 2X8    | <b>Sudbury</b><br>705-564-3030                 | 159 Cedar St Ste 506, Sudbury, ON<br>P3E 6A5  |
| <b>Kenora</b><br>807-468-2879                    | 227 1/2 Second St South,<br>Kenora, ON P9N 1G4                                       | <b>Thunder Bay</b><br>807-346-1550             | 189 Red River Rd Suite 103,<br>Thunder Bay, ON P7B 1A2                                      |
| <b>Kingston</b><br>613-548-1151                  | Cornell Corporate Centre, 299<br>Concession St Ste 201,<br>Kingston, ON K7K 2B9      | <b>Timmins</b><br>705-235-1950                 | Ontario Government Complex, 5520<br>Highway 101 East Wing B, South<br>Porcupine, ON P0N 1H0 |
| <b>Kitchener</b><br>519- 653-5758                | 4275 King St East Ste 200,<br>Kitchener, ON N2P 2E9                                  | <b>Toronto Central</b><br>416-326-5800         | 625 Church St 1st Fl, Toronto, ON<br>M7A 2B5  |
| <b>London</b><br>519-675-7788                    | 1200 Commissioners Rd E Unit<br>72, London, ON N5Z 4R3                               | <b>Windsor Central</b><br>519-973-1441         | Roundhouse Centre, 3155 Howard<br>Ave 2nd Fl, Ste 200, Windsor,<br>ON N8X 4Y8               |
| <b>Mississauga<br/>(City of)</b><br>905-279-7333 | The Emerald Centre, 10<br>Kingsbridge Garden Cir Ste<br>404, Mississauga, ON L5R 3K6 |  |   |

For current office listings, please visit: <http://services.findhelp.ca/eo/tcu/appoff>

## Completing Your Apprenticeship Program

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

- ✔ Check the Ontario College of Trades Public Register to make sure your Apprentices class membership is still active:  
<https://tmsportal.collegeoftrades.ca/web/ocot-public-services-v3/public-registry>
- ✔ Follow the completion instructions on the Completion Form (Appendix A) in the Log Book.
- ✔ Answer any questions that MTCU staff may have, and provide any additional completion documentation they may require.
- ✔ Once they confirm completion, MTCU will issue you a Certificate of Apprenticeship and notify the Ontario College of Trades of your completion.

## After Your Apprenticeship

If you are in a trade with a certification exam, the College of Trades will **automatically** complete your membership in the Apprentices class and activate your 12-month membership in the Journeyperson Candidates class. This change will be reflected on your account with the College as well as on the College's Public Register.

Membership in the Journeyperson Candidates class will allow you to continue practising in a compulsory trade for 12 months while you prepare for and write your exam; if you are in a voluntary trade, it is your automatic approval to challenge the certification exam.

The College will send you a Journeyperson Candidates class welcome letter within 3 weeks of completion that outlines any/all of your future requirements for membership and examination as appropriate (different situations for voluntary and compulsory trades).

If you complete an apprenticeship program for which there is no exam, you can submit an application to become a member of the College's Journeypersons class on the basis of having earned a Certificate of Apprenticeship in the trade.

## Preparing For Your Exam

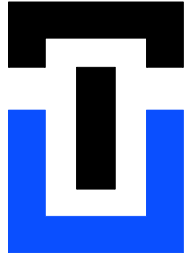
**Find out if your trade has a Certificate of Qualification exam at:**

[www.collegeoftrades.ca/wp-content/uploads/tradesOntarioTradesCodes\\_En.pdf](http://www.collegeoftrades.ca/wp-content/uploads/tradesOntarioTradesCodes_En.pdf)

**For permission to schedule an exam once completion is confirmed by MTCU**, you must first contact the College's Client Services Department at 647-847-3000 or toll free at 1-855-299-0028 to pay the certification exam fee. Once you have paid, contact your local MTCU Apprenticeship office to book your exam.

**Download Ontario College of Trades exam preparation guide at:**

[www.collegeoftrades.ca/resources/exam-process](http://www.collegeoftrades.ca/resources/exam-process) and/or view the exam preparation guide for Red Seal trades at: [www.red-seal.ca/w.2lc.4m.2@-eng.jsp](http://www.red-seal.ca/w.2lc.4m.2@-eng.jsp).



**ONTARIO COLLEGE OF TRADES**  

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**ORDRE DES MÉTIERS DE L'ONTARIO**

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