



Ontario
College of
Teachers

Ordre des
enseignantes et
des enseignants
de l'Ontario

Additional Qualification Course Guideline Teaching Transportation Technology - Auto Service

Schedule F Teachers' Qualifications Regulation

February 2015

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Additional Qualification Course Guideline

1. Introduction

The guideline for Teaching Transportation Technology - Auto Service is organized using the following framework.



Diagram 1: Guideline Organization

Teachers are able to take the Additional Qualification course: Teaching Transportation Technology - Auto Service if they hold a technological education qualification at Grades 9 and 10 or Grades 11 and 12 in the broad-based area of Teaching Transportation Technology.

The Additional Qualification Course: Teaching Transportation Technology - Auto Service employs a critical, pedagogical lens to explore in holistic and integrated manner theoretical foundations, development of learners, program planning and implementation, instructional practices, assessment and evaluation, the learning environment and ethical considerations related to teaching and learning.

The Ontario College of Teachers recognizes that candidates working in the publicly funded school system, independent/private institutions or First Nations schools will have a need to explore topics and issues of particular relevance to the context in which they work or may work.

Critical to the implementation of this course is the creation of positive learning experiences that reflect care, diversity and equity. This course supports the enhancement of professional knowledge, ethical practice, leadership and ongoing learning.

The French language and the English language communities will also need to implement these guidelines to reflect the unique contextual dimensions and needs of each community. Each of these language communities will explore the guideline content from distinct perspectives and emphasis. This flexibility will enable both language communities to implement Teaching Transportation Technology - Auto Service as understood from a variety of contexts.

The Teaching Transportation Technology - Auto Service additional qualification course guideline provides a conceptual framework for providers and instructors to develop and facilitate the Teaching Transportation Technology - Auto Service course. The guideline framework is intended to be a fluid, holistic and integrated representation of key concepts associated with Teaching Transportation Technology - Auto Service.

2. Regulatory Context

The College is the self-regulating body for the teaching profession in Ontario. The College's responsibility related to courses leading to additional qualifications includes the following:

- to establish and enforce professional standards and ethical standards applicable to members of the College
- to provide for the ongoing education of members of the College
- to accredit additional qualification courses or programs and more specifically,

The program content and expected achievement of persons enrolled in the program match the skills and knowledge reflected in the College's Standards of Practice for the Teaching Profession and the Ethical Standards for the Teaching Profession and in the program guidelines issued by the College.

(*Accreditation of Teacher Education Programs Regulation, Part IV, Subsection 24*).

Additional qualifications for teachers are identified in the *Teachers' Qualifications Regulation*. This regulation includes courses/programs that lead to Additional Qualifications, the Principal's Qualifications and the Supervisory Officer's Qualifications. A session of a course leading to an additional qualification shall consist of a minimum of 125 hours as approved by the Registrar. Accredited additional qualification courses reflect the *Ethical Standards for the Teaching Profession*, the *Standards of Practice for the Teaching Profession* and the *Professional Learning Framework for the Teaching Profession*.

The course developed from this guideline is open to candidates who meet the entry requirements identified in the *Teachers' Qualifications Regulation*.

Successful completion of the course leading to the Additional Qualification: Teaching Transportation Technology - Auto Service, listed in Schedule F of the *Teachers' Qualifications Regulation* is recorded on the Certificate of Qualification and Registration. Successful completion of three schedule F courses within a specific broad-based technology area will be deemed to be equivalent to one specialist or honour specialist qualification for purposes of entry into the principal's qualification or the supervisory officer qualification. (O. Reg. 176/10 S.49 (4) and (5))

In this document, all references to candidates are to teachers enrolled in the additional qualification course. References to students indicate those enrolled in school programs.

3. Foundations of Professional Practice

The *Foundations of Professional Practice* conveys a provincial vision of what it means to be a teacher in Ontario. This vision lies at the core of teacher professionalism. The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* (Appendix 1) are the foundation for the development and in the realization of the Additional Qualification course. These nine standards, as principles of professional practice, provide the focus for ongoing professional learning and are the foundation for the development and implementation of the Additional Qualification Course: Teaching Transportation Technology - Auto Service. In addition, the

Professional Learning Framework for the Teaching Profession is underpinned by the standards, articulates the principles on which effective teacher learning is based and acknowledges a range of options that promote continuous professional learning. The ongoing enhancement of informed professional judgment, which is acquired through the processes of lived experience, inquiry, and reflection, is central to the embodiment of the standards and the Professional Learning Framework within this AQ course and professional practice.

The *Ethical Standards of the Teaching Profession* and the *Standards of Practice for the Teaching Profession* serve as guiding frameworks that underpin professional knowledge, skills and experiences that teachers require in order to teach effectively within and contribute to an environment that fosters *respect, care, trust and integrity*.

Teacher-Education Resources

The College has developed resources to support the effective integration of the standards within Additional Qualification courses and programs. These teacher education resources explore the integration of the standards within professional practice through a variety of educative, research and inquiry-based processes. This guideline has been designed to reflect the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* and the *Professional Learning Framework for the Teaching Profession*. These resources can be found on the College web site (www.oct.ca). These resources support the development of professional knowledge and professional judgment through reflective practice. The lived experiences of Ontario educators are illuminated in the resources and serve as AQ course support for teacher education.

4. Conceptual Framework

The design, course content and implementation of the Additional Qualification Course Guideline: Teaching Transportation Technology - Auto Service support effective teacher education practices. These course guideline components provide a conceptual framework for the development of a holistic, integrated, experiential and inquiry-based course. The following conceptual framework supports and informs professional knowledge, judgment and practices within the Additional Qualification Course: Teaching Transportation Technology - Auto Service.

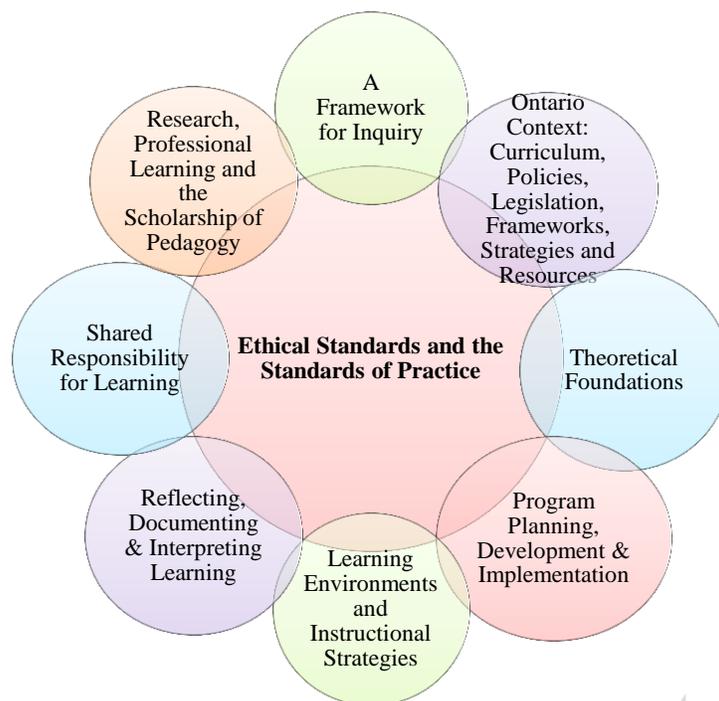


Diagram 2: Conceptual Framework for Teaching Transportation Technology - Auto Service

A. *The Ethical Standards for the Teaching Profession and the Standards of Practice for the Teaching Profession:*

The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* represent a collective vision of professional practice. At the heart of a strong and effective teaching profession is a commitment to students and their learning. Members of the Ontario College of Teachers, in their position of trust, demonstrate responsibility in their relationships with students, parents, guardians, colleagues, educational partners, other professionals, the environment and the public.

The holistic integration of the standards within all course components supports the embodiment of the collective vision of the teaching profession that guides professional knowledge, learning, and practice. The following principles and concepts support this holistic integration within the AQ course.

- understanding and embodying care, trust, respect and integrity

- fostering commitment to students and student learning
- integrating professional knowledge
- enriching and developing professional practice
- supporting leadership in learning communities
- engaging in ongoing professional learning.

Through professional dialogue, collaborative reflection and an ethical culture, course candidates will continue to critically inquire into and refine professional practice and ethical culture through the lens of the *Standards of Practice for the Teaching Profession*.

B. A Framework for Inquiry

The *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* are embedded throughout the Additional Qualification course guideline.

This Additional Qualification course supports critical reflective inquiry and dialogue informed by the following:

- analyzing, interpreting and implementing Ontario’s curriculum, district school board policies, frameworks, strategies and guidelines related to the Broad Based Technology
- developing awareness of First Nations, Métis and Inuit ways of knowing and perspectives
- extending theoretical understanding to design, implement and assess practices and/or programs
- implementing pedagogical strategies and assessment and evaluation practices that are linked to expectations, meet the individual needs of students, and promote student learning
- creating holistic learning environments conducive to the intellectual, social, emotional, physical, linguistic, cultural, spiritual and moral development of students
- working collaboratively with school personnel, parents/guardians, caregivers, the community, local business and industry as it relates to Teaching Transportation Technology - Auto Service

- exercising leadership in accessing a variety of resources, including technological resources, within and beyond the educational system to enhance and support student learning
- refining professional practice through ongoing collaborative inquiry, dialogue and reflection
- modelling ethical practices and addressing ethical issues
- critically exploring and integrating environmentally sustainable practices
- fostering responsible, active environmental citizenship
- collaboratively developing and sustaining professional learning communities for enhancing professional knowledge and supporting student learning
- fostering leadership in the integration of information and communication technology to enhance teaching and learning
- critically exploring innovative strategies to create and sustain safe, healthy, equitable and inclusive learning environments that honour and respect diversity and foster student learning
- understanding the importance of critically examining qualitative and quantitative research related to professional practice
- critically exploring strategies to understand, gain insight into and support learners' well-being and mental health needs
- working collaboratively with interdisciplinary school teams to develop and implement Individual Education Plans (IEPs) of students
- exploring strategies that contribute to a culture that promotes openness to innovation and change
- demonstrating an awareness of emerging technologies related to Teaching Transportation Technology - Auto Service
- demonstrating an awareness of health and safety risks associated with Teaching Transportation Technology - Auto Service
- applying knowledge and skills to create and maintain a safe learning environment that addresses program needs: curriculum, material handling, tool handling and equipment storage, supervision, safety standards and practices that are respectful of the environment
- demonstrating technological literacy related to Teaching Transportation Technology - Auto Service

- writing technical reports and creating and managing portfolios
- demonstrating mathematical literacy in Teaching Transportation Technology - Auto Service
- demonstrating an understanding of business management and entrepreneurial practices related to Teaching Transportation Technology - Auto Service
- inquiring into practice through reflection, active engagement and collaboration
- enhancing awareness of holistic learning environments
- understanding the various professional practices and career opportunities in Teaching Transportation Technology - Auto Service
- critically exploring the relationship between education, mental health and well-being
- identifying ways to modify expectations, instructional strategies and assessment practices in Teaching Transportation Technology - Auto Service.

C. Ontario Context: Curriculum, Policies, Legislation, Frameworks, Strategies and Resources

The Additional Qualification Course: Teaching Transportation Technology - Auto Service is aligned with current Ontario curriculum, relevant legislation, government policies, frameworks, strategies and resources. These documents inform and reflect the development and implementation of the Additional Qualification Course: Teaching Transportation Technology - Auto Service and can be viewed at www.edu.gov.on.ca.

Course candidates are also encouraged to critically explore the policies, practices and resources available at school and board levels that inform teaching and learning related to Teaching Transportation Technology - Auto Service.

D. Theoretical Foundations of Teaching Transportation Technology - Auto Service

- understanding theories of student development (social, emotional, physical, intellectual, linguistic, cultural, spiritual and moral)

- understanding Ontario curriculum, resources and government policies, frameworks and strategies related to Teaching Transportation Technology - Auto Service
- understanding learning theories and the particular learning needs of the adolescent in the Intermediate and Senior Divisions
- critically exploring a variety of conceptual frameworks related to Teaching Transportation Technology - Auto Service
- reflecting on teaching practice and engaging in professional dialogue regarding the relationship between theory and practice
- integrating the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* as the foundation for teacher professionalism within the Additional Qualification Course: Teaching Transportation Technology - Auto Service
- critically exploring the significance of relevant legislation including the Ontario Human Rights Code, Ontarians with Disabilities Act, and the Accessibility for Ontarians with Disabilities Act (AODA) and associated responsibilities within professional practice
- recognizing teachers' legal obligations and ethical responsibilities according to current provincial legislation
- critically inquiring into the dimensions associated with creating and sustaining safe learning environments
- critically exploring holistic and inclusive educational programs that build on learners' abilities and empower them to reach their learning goals
- critically exploring problem solving processes, methods and approaches as they relate to Teaching Transportation Technology - Auto Service
- critically exploring the fundamental technological concepts in Teaching Transportation Technology - Auto Service.

E. Program Planning, Development and Implementation

- applying the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* to inform a program planning framework
- critically exploring the influence of society's diverse and changing nature on student learning and well-being

- deepening understanding of program planning, development, implementation strategies and frameworks related to Teaching Transportation Technology - Auto Service
- deepening understanding of differentiated instruction, universal design and the tiered approach in program planning, development and implementation
- critically exploring learning resources (for example, print, visual, digital) that support student learning
- understanding the types of secondary school pathways (including apprenticeship, college, university, workplace) and their relationship to students' post-secondary goals and career opportunities
- critically exploring how students' lived experiences, development, strengths, interests and needs can inform program planning, development and implementation
- integrating culturally responsive pedagogy within program planning and development
- critically exploring strategies that support learners' well-being and mental health needs
- planning instructional strategies that integrate students' learning styles, strengths and experiences
- demonstrating leadership in implementing local and provincial guidelines and policies that support safe and effective learning environments
- inspecting and reporting on the learning environment, facilities, equipment needs, resources and state of maintenance and repair for delivering Teaching Transportation Technology - Auto Service
- applying the theoretical foundations of Teaching Transportation Technology - Auto Service by incorporating the broad-based pedagogical approach that embeds problem solving and the fundamental technological concepts
- identifying the safe, ethical and legal use of technology in Teaching Transportation Technology - Auto Service programs
- critically exploring and integrating multiple formal and informal assessment methods and data to inform program planning and support student learning.

F. Learning Environments and Instructional Strategies

- creating and sustaining positive, ethical, equitable, accepting and safe learning environments
- critically exploring strategies for fostering a collaborative community of empowered learners
- fostering engaging, trusting and inviting learning environments that promote student voice, leadership, critical inquiry and self-regulation
- critically exploring a variety of instructional strategies to support student learning
- developing strategies to create a positive and collaborative learning environment to support student learning
- cultivating safe, ethical and respectful practices in the use of technology in purposeful and legal ways
- integrating information and communication technologies that support student learning
- providing leadership in adapting instruction to meet the needs of all learners
- critically exploring strategies that engage students as active citizen in supporting environmental, social and economic sustainability
- using pedagogies that reflect the professional identity of educators as described in the *Ethical Standards for the Teaching Profession* and the *Standards of Practice for the Teaching Profession* and in the *Foundations of Professional Practice*
- creating inclusive learning environments that reflect the ethical standards and standards of practice
- implementing safe and effective management of a variety of technical learning environments
- planning, organizing and implementing effective health, safety, sanitation and environmental standards in the Teaching Transportation Technology - Auto Service facility
- demonstrating an understanding of facility design and maintenance practices as per industry standards

- understanding and complying with workplace health and safety legislation and standards related to Teaching Transportation Technology - Auto Service.

G. Reflecting, Documenting and Interpreting Learning

- collaboratively integrating fair and equitable, transparent, valid and reliable assessment and evaluation methods that honour the dignity, emotional wellness and cognitive development of all students
- critically exploring and collaboratively integrating assessment, evaluation and reporting practices that align with the principles and processes of Ontario's curriculum, frameworks and policy documents
- using assessment for the following three purposes: to provide feedback to students and to adjust instruction (assessment for learning); to develop students' capacity to be independent, autonomous learners (assessment as learning); to make informed judgements about the quality of student learning (assessment of learning)
- critically exploring the use of baseline data as well as current assessment data to reflect on how the students are progressing and the effectiveness of the learning strategies used.

H. Shared Responsibility for Learning

- critically exploring and collaboratively integrating a variety of effective communication and engagement strategies for authentic collaboration with parents/guardians, school/board personnel and community agencies
- critically exploring and engaging in strategies and opportunities for professional collaboration that supports student learning and well-being
- collaboratively designing programs that address biases, discrimination and systemic barriers in order to support student learning, well-being and inclusion
- fostering and sustaining a positive, inclusive educational culture in which all perspectives are encouraged, valued and heard
- understanding and respecting the importance of shared responsibility and partnership as conveyed in the standards and the Foundations of Professional Practice

- developing strategies to establish links between the school community, industry and the Teaching Transportation Technology - Auto Service program
- critically exploring sector-specific learning opportunities in other curriculum areas
- critically exploring professional collaboration within interdisciplinary teams to support student learning, self-advocacy and transitions.

I. Research, Professional Learning and the Scholarship of Pedagogy

- critically exploring past, present and evolving practices in Teaching Transportation Technology - Auto Service
- critically exploring professional practice through ongoing inquiry into theory and pedagogy/andragogy
- engaging in professional learning through research, scholarship and leadership
- integrating research and the scholarship of pedagogy/andragogy into teaching practice
- collaborating in research and the scholarship of pedagogy/andragogy
- critically exploring knowledge-creation and mobilization as professional practice.

5. Instructional Practice in the Additional Qualification Course: Teaching Transportation Technology - Auto Service

Candidates will collaboratively develop with course instructors the specific learning inquiries, learning experiences, and forms of assessment and evaluation that will be used throughout the course.

In the implementation of this Additional Qualification course, instructors use strategies that are relevant, meaningful and practical in providing candidates with learning experiences about instruction, pedagogy and assessment and evaluation. These include but are not limited to: experiential learning, small group

interaction; action research; presentations; independent inquiry; problem solving; collaborative learning and direct instruction.

Instructors model the *Ethical Standards of the Teaching Profession* and the *Standards of Practice for the Teaching Profession*, honour the principles of adult learning, recognize candidates' experience and prior learning and respond to individual needs. Important to the course are opportunities for candidates to create support networks and receive feedback from colleagues and instructors and share the products of their learning with others. Opportunities for professional reading, reflection, dialogue and expression are also integral parts of the course.

Instructors model effective instructional and assessment strategies that can be replicated or adapted in a variety of classroom settings.

A. Experiential Learning

Candidates will be provided with opportunities to engage in experiential learning related to key concepts and aspects of Teaching Transportation Technology - Auto Service as collaboratively determined by both the instructor and course candidates. The intent of the experiential learning opportunities is to support the application and integration of practice and theory within the authentic context of teaching and learning. Candidates will also engage in critical reflection and analysis of their engagement in experiential learning opportunities related to Teaching Transportation Technology - Auto Service. The professional judgment, knowledge and pedagogy of candidates will be enhanced and refined through experiential learning and inquiry.

The College's standards resources help to support experiential learning through various forms of professional inquiry.

6. Assessment and Evaluation of Candidates

At the beginning of the course, candidates will collaboratively develop with course instructors the specific learning inquiries, learning experiences, and forms of assessment and evaluation that will be used throughout the course. Instructors will provide opportunities for regular feedback regarding candidates' progress throughout the course.

A balanced approach to candidate assessment and evaluation is used. It includes the combination of candidate self and peer assessment, as well as instructor evaluation. The assessment and evaluation strategies reflect effective, collaborative and inquiry-based practices. A variety of assessment approaches will be used that enable candidates to convey their learning related to course inquiries. The course provides opportunities for both formative and summative assessment and evaluation.

Central to candidates enrolled in Additional Qualification courses is the opportunity to be engaged in relevant and meaningful inquiries. Assignments, artefacts and projects enable candidates to make connections between theory and practice. At the same time, assignments must allow candidates flexibility, choice and individual inquiry opportunities.

Part of the evaluation process may include a major independent project or action research component over the duration of the course. This project is an opportunity for candidates to illustrate a high level of professional knowledge, communication skills, pedagogy, ethical practices and instructional leadership. Similarly, if a portfolio assignment is used it will also include reflections and analysis of a candidate's learning over time.

A final culminating experience in the course is recommended. This experience may take the form of a written assessment, a research paper, a performance, an inquiry project or a product that is original, meaningful and practical.

The following list of assessment strategies which are reflective of experiential learning is not exhaustive; it is intended to serve as a guide only.

- a) Performance assessment: designing a sample unit which includes a culminating activity and appropriate assessment and evaluation tools, incorporates a variety of technologies and resources relevant to the study of Teaching Transportation Technology - Auto Service, and is based on Ministry of Education expectations
- b) Written assignment: reflecting critically on issues arising from articles, publications, research and/or other resources related to the teaching or practice to Teaching Transportation Technology - Auto Service
- c) Presentation: developing a digital story, presenting an issue related to the teaching and learning related to Teaching Transportation Technology - Auto Service

- d) Portfolio: creating a portfolio of practical resources, artefacts, photographs and recording critical reflections for one or several components related to Teaching Transportation Technology - Auto Service
- e) Action research: engaging in action research by reflecting and acting upon a specific inquiry into teaching practice related to Teaching Transportation Technology - Auto Service
- f) Independent project: addressing any aspect of the course that is approved by the instructor
- g) Instructional resource: developing a meaningful resource that will support instruction and pedagogy related to the teaching and learning of Teaching Transportation Technology - Auto Service
- h) Reflective writing: reflecting on professional practice through journal-writing, or writing a case or vignette that will support instruction and pedagogy related to the teaching and learning of Teaching Transportation Technology - Auto Service
- i) Case inquiry: writing or exploring a case related to collaboration and shared partnerships, with parents, colleagues, and community organizations
- j) IEP development: collaboratively develop an IEP related to Teaching Transportation Technology - Auto Service with the family, student and school team
- k) Facilitating a Learning Experience: developing and implementing an engaging learning experience that reflects differentiated instruction and universal design and the tiered approach.

7. Demonstrated Knowledge and Skill in Teaching Transportation Technology - Auto Service

Successful candidates will be able to demonstrate technical knowledge and skill in the following:

	Transportation Technology Fundamentals	Transportation Technology Skills
Understanding Engines	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • The principles of the four stroke cycle • The principles of automobile engines • The principles of light trucks engines • The principles of diesel powered engines • The principles of propane powered engines • The principles of solar powered engines • The principles of alternative powered vehicle engines. <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • The difference between the numerous types of motive powered engines in the Auto Service industry <p>for example:</p> <ul style="list-style-type: none"> ○ Automobile engines ○ Light truck engines ○ Diesel powered engines ○ Propane powered engines ○ Solar powered engines 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Diagnostic process steps necessary to diagnose malfunctioning motive power engines (for example, manufacturer trouble code charts; manufacturer service manual design process steps, wiring diagrams) as it applies to the Auto Service industry • Troubleshooting and problem solving skills to diagnose engine faults correctly (for example, engine noise, engine fluid leaks, engine overheating) as it applies to the Auto Service industry • Auto Service industry manufacturer recommendations for scheduled engine maintenance procedures (for example, oil change, tune ups, fluids). <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Proper testing and servicing procedures for cylinder heads, valve trains, and related components

	Transportation Technology Fundamentals	Transportation Technology Skills
	<ul style="list-style-type: none"> ○ Alternative powered engines. <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • The four stroke cycle operation (for example, intake compression, power, exhaust) • Various components and parts of motive powered engines in the Auto Service industry for example: <ul style="list-style-type: none"> ○ Aluminum construction ○ Cast construction ○ Fuel Systems ○ Cooling systems ○ Lubricating systems ○ Exhaust systems ○ Pistons ○ Crankshafts ○ Camshafts ○ Pistons ○ Timing gears ○ Valves ○ Push rods ○ Lifters ○ Wrist pins ○ Compression rings ○ Bearings ○ Gaskets ○ Spark plugs 	<p>following Auto Service industry manufacturers' recommendations and safe work practices (for example, remove valves; adjust valve lash, valve lapping)</p> <ul style="list-style-type: none"> • Repair skills to replace motive powered engines (automobiles, light trucks, alternative powered vehicles) in the Auto Service industry • Diagnosing and repair skills to replace motive powered engine components (for example, cylinder heads, pistons, valves, crankshafts, connecting rods, camshafts, valve springs, push rods, lifters, oil pumps) in the Auto Service industry • The skills to perform regularly scheduled maintenance (for example, engine oil change, coolant changes, gear fluid change) in the Auto Service industry. <p>Be able to use:</p> <ul style="list-style-type: none"> • Manufacturer manuals and flowcharts to correctly troubleshoot engine concerns (engine misfire, engine surge, engine knock) in the Auto Service industry • Manufacturer specific diagnostic equipment / scan tools to diagnose malfunctioning engine components (for example, computerized scan tools, volt meter, test light) as it applies to the Auto Service industry

	Transportation Technology Fundamentals	Transportation Technology Skills
	<ul style="list-style-type: none"> ○ Glow plugs ○ Ignition wires ○ Coils ○ Battery ○ Alternator ○ Starter ○ Water pump ○ Thermostat ○ Fans ○ Etc. 	<ul style="list-style-type: none"> • Specialty tools and equipment to replace motive powered engines (for example, engine crane, engine stand, transmission jack, transmission stand) in the Auto Service industry • Specialty tools and equipment to replace motive powered engine components (for example, flywheel puller, flywheel holder, piston stop) in the Auto Service industry • Specialty tools and equipment to perform regularly scheduled maintenance (for example, floor jack, axle stands, oil drain buckets) in the Auto Service industry.
Understanding Engine Management Systems	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • Environmentally harmful gasses that are produced through combustion (for example, four stroke cycle engines, diesel engines, propane engines) and how the Engine Management systems control the level of emissions in the exhaust gases produced in motive powered engines in the Auto Service industry • The principles of Engine Management systems that apply to fuel metering, engine timing devices, and emissions devices in the Auto Service industry • A variety of electronically controlled fuel systems used in the Auto Service industry. 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Diagnostic process steps to diagnose malfunctioning motive power Engine Management Systems (for example, manufacturer trouble code charts; manufacturer service manual design process steps, wiring diagrams) as it applies to the Auto Service industry. <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Interruption of sensor and actuator data retrieved from diagnostic equipment to correctly diagnose engine control systems and components (for example, manufacturer scan tools) in the Auto Service industry

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • The principles of operation of various Engine Management systems (for example, exhaust gas re-circulation (EGR), electronic fuel injection (EFI), used vegetable oil) in the Auto Service industry • Diagnostic flow charts to assist in engine performance diagnostics in the Auto Service industry • Technical service bulletins provided by Auto Service industry manufacturers • Service manual information as it pertains to the Auto Service industry • Regularly scheduled maintenance recommended by Auto Service industry manufacturers (for example, air filter, fuel injector service, fuel filter, glow plug service, diesel fuel conditioner etc.). <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • Components of Engine Management systems (for example, catalytic converters, mufflers, baffles) in the Auto Service industry • Control devices commonly used in Engine Management systems (for example, powertrain control module, emission control units, electronic control unit) in the Auto Service industry. 	<ul style="list-style-type: none"> • Safe working practices and knowledge of how to repair / replace malfunctioning motive power Engine Management components (for example, removal and installation of replacement parts such as EGR valves, mufflers, fuel filters, fuel pumps, catalytic converters, baffles) as it applies to the Auto Service industry • Proper identification and location of Engine Management sensors, actuators, and modules (for example, engine coolant temperature sensor, fuel solenoids, electrical / power train control module) in the Auto Service industry. <p>Be able to use:</p> <ul style="list-style-type: none"> • Manufacturer manuals and flowcharts to correctly troubleshoot motive power Engine Management Systems (poor fuel economy, engine surge) in the Auto Service industry • Manufacturer specific diagnostic equipment / scan tools to diagnose malfunctioning motive power Engine Management Systems components (for example, computerized scan tools, volt meter, test light) as it applies to the Auto Service industry • Manufacturer specific tools / equipment that illustrates how to repair malfunctioning motive power Engine Management Systems components

	Transportation Technology Fundamentals	Transportation Technology Skills
		<p>(for example, Removal and installation of replacement parts such as fuel injectors, mufflers, temperature sensors, diesel glow plugs) as it applies to the Auto Service industry</p> <ul style="list-style-type: none"> • Specialty tools and equipment to perform regularly scheduled maintenance on motive power Engine Management Systems (for example, floor jack, axle stands, oil drain buckets, diesel fuel conditioner, fuel injection pressurized cleaner) in the Auto Service industry.
Understanding Power Transfer Devices	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • The principles of automatic transmissions in the Auto Service industry • The principles of standard transmissions in the Auto Service industry • The principles of rear differential and gears in the Auto Service industry • The principles of 4X4 transfer cases in the Auto Service industry • The construction, operating principles, testing and servicing of power train assemblies, gearing fundamentals, drive shafts, universal joints and drive axle assemblies in the Auto Service industry. <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • How energy is converted into motion in the Auto 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • The construction of automatic transmissions and the skills to repair or replace components (for example, synchronizers, valve bodies, solenoids) in the Auto Service industry • The construction of standard transmissions and the skills to repair or replace components (for example, clutch material, release bearings, clutch forks, linkages, gear shifter, clutch pedal) in the Auto Service industry • The construction of rear drive differentials and the skills to repair or replace components (for example, gears, bearings, axles) in the Auto Service industry • The construction of 4X4 transfer cases and the skills to repair or replace components (for example, gears, valve bodies, solenoids, switches) in the Auto

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>Service industry</p> <ul style="list-style-type: none"> • Gear ratios that are used for torque multiplication in the Auto Service industry (for example, 2:1, 3:1, 4:1) • Be able to identify and describe: • specific Power Transfer devices (for example, belt driven, chain driven, gear box driven, clutch driven) in the Auto Service industry <p>various communication skills to describe diagnostic symptoms (for example, noise, vibration, rubbing, squeaks) in the Auto Service industry.</p>	<p>Service industry.</p> <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Proper inspection / diagnosing skills / techniques of Power Transfer components to determine causes of motive power failures (for example, 4X4 will not engage to move, loud grinding noises from rear end of light truck, standard transmission vehicle will not move, automatic transmission vehicle will not accelerate in speed on a high way) in the Auto Service industry • A basic knowledge to identify various types of Power Transfer devices (for example, transmissions, transfer case, differentials) used in the Auto Service industry. <p>Be able to use:</p> <ul style="list-style-type: none"> • Manufacturer manuals and flowcharts to correctly troubleshoot Power Transfer Devices (no drive condition, no speed condition, surge condition) in the Auto Service industry • Manufacturer specific diagnostic equipment / scan tools to diagnose malfunctioning Power Transfer devices (for example, computerized scan tools, volt meter, test light) as it applies to the Auto Service industry • Manufacturer specific tools / equipment of how to repair malfunctioning Power Transfer devices (for

	Transportation Technology Fundamentals	Transportation Technology Skills
		<p>example, removal and installation of a replacement clutch, rear axle seals, clutch packs) as it applies to the Auto Service industry</p> <ul style="list-style-type: none"> • Specialty tools and equipment to perform regularly scheduled maintenance on Power Transfer devices (for example, lubricating pivot points, greasing nipples, fluid changes) in the Auto Service industry.
Understanding Electrical and Electrical Circuits & Components	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • Inspecting and diagnostics on specific applications and electrical circuits as it relates to the Auto Service industry (for example, starting systems, lighting circuits, charging systems) • Fundamental principles of a series circuit as it relates to the Auto Service industry • Fundamental principles of a parallel circuit as it relates to the Auto Service industry • Fundamental principles of Ohm's law as it relates to the Auto Service industry • Fundamental principles of Kirchhoff's circuit law as it relates to the Auto Service industry • Fundamental principles of Watt's circuit law as it relates to the Auto Service industry • Applying manufacturers' wiring schematics and troubleshooting diagrams for the Auto Service industry • Demonstrate an understanding of air bag 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Basic electrical skill for reading manufacturer wiring schematics and troubleshooting diagrams of all series and parallel circuits (for example, malfunctioning components on a automobile, light truck, alternative powered vehicle) as it pertains to the Auto Service industry • Ohm's Law principles in reading and understanding circuits / diagrams in motive powered vehicle diagnostics (for example, a malfunctioning headlight in an automobile, light truck, alternative powered vehicle) in the Auto Service industry • Kirchoff's Law principles in reading and understanding circuits / diagrams in motive powered vehicle diagnostics (for example, malfunctioning ignition switch in a automobile, light truck, alternative powered vehicle) in the Auto Service industry • Diagnostics and troubleshooting skills when

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>electrical systems and components</p> <ul style="list-style-type: none"> • Be able to recognize and interpret: • The components of a series and parallel circuit and how they relate to applications in the Auto Service industry • Diagnosing malfunctioning electrical circuits and components (for example, short to ground, voltage surge, open circuits) in the Auto Service industry • Proper use of manufacturers' wiring schematics and troubleshooting diagrams relating to the Auto Service industry • Multi-meter readings based on electrical test results (for example, voltage drops, current flow, resistance checks) relating to the Auto Service industry. <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • Electrical units of measure (for example, volts, ohms, amperage) as it relates to the Auto Service industry • Fundamentals of electronic circuits and components (for example, fuses, relays, fusible links) as it relates to the Auto Service industry • Electrical faults and proper repair procedures (for example, short, open, draws) as it relates to the Auto Service industry 	<p>determining a fault of an operative electrical circuit (for example, blown fuse, open circuit, faulty relay) in the Auto Service industry.</p> <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Proper inspection techniques and testing of a variety of electrical circuits (for example, resistance checks, load testing, amperage draw test on circuits, voltage drop test) in the Auto Service industry • Proper inspection techniques and testing of air bag systems safely (for example, disconnecting the battery, unplugging the air bag harness, handling an air bag) in the Auto Service industry • Proper connects and repairs on electrical circuits both internally and externally (water exposure) in the Auto Service industry. <p>Be able to use:</p> <ul style="list-style-type: none"> • Multi-meters, test lights, etc. when diagnosing / trouble shooting electrical concerns (for example, heated seat, power window, or radio is inoperative) as it relates to the Auto Service industry • Be able to use specific tools (for example, soldering gun, wires strippers, pliers) to repair malfunctioning components / connections in the Auto Service industry.

	Transportation Technology Fundamentals	Transportation Technology Skills
	<ul style="list-style-type: none"> • Reading electrical component symbols from electrical schematics (for example, fuses, fusible links, relays, switches) as it relates to the Auto Service industry. 	
Understanding Major Systems & Components	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • Braking systems in the Auto Service industry • Lubrication systems in the Auto Service industry • Suspension systems in the Auto Service industry • Steering systems in the Auto Service industry • Fuel systems in the Auto Service industry • Cooling systems (mixing the correct manufacturer specifications of ethylene glycol to water ratio) in the Auto Service industry • Fuel selection (regular, premium, supreme, diesel, vegetable oil) in the Auto Service industry. <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • Diagnosis of all malfunctioning systems as it applies to the Auto Service industry • Specific malfunctioning components as it applies to the Auto Service industry • Brake system components (for example, rotors, drums, pads, shoes) in the Auto Service industry • Lubrication system components (for example, oil pumps, oil filters, oil viscosity rating) in the Auto Service industry 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Steps to diagnose malfunctioning systems (for example, Manufacturer diagnostic service manuals and wiring diagrams) as it applies to the Auto Service industry • Steps to diagnose malfunctioning components (for example, Manufacturer diagnostic service manuals and wiring diagrams) as it applies to the Auto Service industry. <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Safe working practices and skills related to the repair of malfunctioning components (for example, light truck rear drums, alternative powered vehicle disc brake rotors, automobile brake pads) of a motive powered vehicles brake system in the Auto Service industry • Safe working practices and skills related to the repair of malfunctioning components (for example, light truck oil pump, automobile crankcase gasket) of a motive powered vehicles lubrication system in the Auto Service industry

	Transportation Technology Fundamentals	Transportation Technology Skills
	<ul style="list-style-type: none"> • Steering system components (for example, rack and pinion, steering box) in the Auto Service industry • Fuel system components (for example, fuel filters, fuel pumps) in the Auto Service industry • Cooling system components (for example, thermostats, cooling fans, radiators, block heaters) in the Auto Service industry. <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • Different braking systems and brake components in the Auto Service industry (for example, pads, disc rotors, drums, parking brake cables, wheel cylinders, proportioning valves) • Lubrication systems and lubrication system components in the Auto Service industry (for example, oil pumps, oil filters, gears) • Different suspension systems and suspension components in the Auto Service industry (for example, struts, coil springs, leaf springs, independent front suspension) • Different fuel systems in the Auto Service industry (for example, EFI, carburetor, diesel, vegetable oil). 	<ul style="list-style-type: none"> • Safe working practices and skills related to the repair of malfunctioning components (for example, light truck shock absorbers, alternative powered vehicle tires, automobile spring / strut assemblies) of a motive powered vehicles suspension system in the Auto Service industry • Safe working practices and skills related to the repair of malfunctioning components (for example, alternative powered vehicle tie rod linkages, automobile rack and pinion, light truck steering box, motive powered vehicle tires) of a motive powered vehicles steering linkage system in the Auto Service industry • Safe working practices and skills related to the repair of malfunctioning components (for example, automobile fuel injection, alternative powered vehicle fuel grade selection) of a motive powered vehicles fuel system in the Auto Service industry • Safe working practices and skills related to the repair of malfunctioning components (for example, light truck thermostat, automobile ethylene glycol to water ratio, alternative powered vehicle cooling fan) of a motive powered vehicles cooling system in the Auto Service industry • Safe working practices and knowledge about performing regularly scheduled maintenance (for example, oil changes, rear-end fluid service, cooling

	Transportation Technology Fundamentals	Transportation Technology Skills
		<p>system service, transmission services, fuel injection service, diesel conditioning service) of motive powered vehicle systems in the Auto Service industry.</p> <p>Be able to use:</p> <ul style="list-style-type: none"> • Specific diagnostic equipment to diagnose malfunctioning systems (for example, Specific manufactures scan tools, spark tester, compression tester) as it applies to the Auto Service industry • Specific specialty tools to repair malfunctioning components (for example, piston ring compressor, torque wrench, one-way clutch socket, flywheel holder) as it applies to the Auto Service industry.
Technological Literacy / Numeracy	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • Writing recommendations for users as they relate to the Auto Service industry • Proper use of technological terminology as it relates to the Auto Service industry • Understanding of and application of the Essential Skills (for example, reading text, writing, document use, computer use, oral communication, numeracy, and thinking skills) as identified in the Ontario Skills Passport, as it relates to the Auto Service industry • Understanding of, and application of the Work Habits (for example, initiative, organization, 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Writing skills to create documents which describe design intention and content, making references for further information or context as it relates to the Auto Service industry • Appropriate mathematic and scientific concepts to product and process design as it relates to the Auto Service industry • Appropriate mathematics to calculate fuel economy (for example, miles per gallon, kms per litre) as it relates to the Auto Service industry • Gear ratio calculation (for example, 2:1, 3:1, 4:1) for specific towing applications in the Auto Service

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>accountability, ethical conduct) as identified in the Ontario Skills Passport, as it relates to the Auto Service industry</p> <ul style="list-style-type: none"> • Applying manufacturer wiring schematics and troubleshooting diagrams to the Auto Service industry diagnosing and repairs • Mixing the correct fuel stabilizer ratio as it pertains to the Auto Service industry • Mixing the correct ethylene glycol to water ratio as it pertains to the Auto Service industry manufacturer specifications • The specific meaning of each letter and number of the vehicle identification number (VIN.) (for example, place of origin, production year, engine size, paint color) on the basis of their placement in the VIN as it pertains to the Auto Service industry. <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • Titles on a typical service manual and electrical circuit diagram as it relates to the Auto Service industry • Proper use of manufacturer wiring schematics and troubleshooting diagrams in the Auto Service industry repair procedures • Different technical terms and acronyms as it pertains to certain models, makes and 	<p>industry</p> <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Appropriate technical language when reading, creating, and using technical reports in the Auto Service industry • Proper terminology for tools and equipment (for example, ratchets, screw drivers, hammers, air tools, battery chargers) when repairing and servicing motive powered vehicles in the Auto Service industry • Calculating correct cylinder bore circumferences during machining process of engine re-building in the Auto Service industry • Proper rebuilding aspects required to meet specific Horse Power (HP) specifications when rebuilding engines as it relate to the Auto Service industry • Numeracy calculating skills to correctly mix fluids (for example, cooling systems ratios of water and ethylene glycol) as it relates to the Auto Service industry. <p>Be able to use:</p> <ul style="list-style-type: none"> • Imperial and metric units of measurement correctly, using typical scales as it relates to the Auto Service industry • A variety of communications techniques and tools to present product and / or process designs as it

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>manufacturer in the Auto Service industry</p> <ul style="list-style-type: none"> • Gear ratio calculation in the Auto Service industry (for example, 2:1, 3:1, 4:1). <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • General terminology in the Auto Service industry for correct use in written and oral communication (for example, removes and replace, remove and inspect). • Mathematical concepts and calculations (for example, bore, stroke, horse power) in the Auto Service industry • Fuel Economy (for example, automobiles, light trucks, alternative powered vehicles) as it relates to the Auto Service industry. 	<p>relates to the Auto Service industry</p> <ul style="list-style-type: none"> • Appropriate technical language and mathematical calculations when preparing reports for a range of audiences (for example, work orders, parts lists) in the Auto Service industry • Supporting documents including scaled drawings, technical reports, and cost analysis to present designs and manufacturing aspects as it relates to the Auto Service industry • Ohm’s circuit law principles in reading and understanding circuits / diagrams in the Auto Service industry • Kirchhoff’s circuit law principles in reading and understanding circuits / diagrams in the Auto Service industry • Watt’s circuit law principles in reading and understanding circuits / diagrams in the Auto Service industry • Correctly use a torque wrench (for example, foot lbs., inch lbs.).
Design Process / Solving Repair Challenges	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • The design process and how Auto Service industry manufacturers make use of it in fabricating and constructing different brands (for example, different model years of automobiles, light trucks, alternative powered vehicles) 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Client invoices and billable hours and disbursements related to Auto Service industry repair projects • Apply diagnosis and process steps in typical service manuals, and electrical circuit diagrams for Auto

	Transportation Technology Fundamentals	Transportation Technology Skills
	<ul style="list-style-type: none"> • Tools and equipment selection process as it relates to the design process in fabrication and repairing of different models in the Auto Service industry • Fabrication processes of different manufacturer brands in the Auto Service industry (for example, Automobiles - Ford, Chevy, Dodge, Honda, Toyota, Nissan). <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • Diagnostics and process steps in a typical service manual, and electrical circuit diagrams in repairing Auto Service motive powered vehicles. <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • The elements of design (for example, line, shape, form, color, texture, space) in the Auto Service industry • Principles of design (for example, proportion, patterns, movement) in the Auto Service industry. 	<p>Service industry repairs</p> <ul style="list-style-type: none"> • Technical skills to layout and inspect a product in the Auto Service industry. <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Visual and Oral Presentations marketing the use of proposed designs to industry / clients (for example, automobiles, light trucks, alternative powered vehicles) in the Auto Service industry • The design process to plan and develop products or processes with a focus on the Auto Service industry. <p>Be able to use:</p> <ul style="list-style-type: none"> • Research reports and presentations (for example, cost estimation, warranty period reports) found in the Auto Service industry • Various research methods and strategies to gather, organize, and interpret motive powered vehicle information and appropriate resources in the Auto Service industry • Scaled Drawings and process specification as it relates to the Auto Service industry.
Tools, Equipment, and Materials	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • The function, purpose and operation of specialty tools, diagnostic equipment and technologies as it applies to the Auto Service industry • Layout and set-up tool procedures in the Auto 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Measurement information retrieved from precision tools (for example, micrometers, dial indicators, torque wrenches) to make accurate conclusions on component conditions used in the Auto Service

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>Service industry for diagnosing, repair, or servicing</p> <ul style="list-style-type: none"> Advanced measuring tools (micrometer, dial indicators, depth gauges, compression testers) as it pertains to the Auto Service industry Tools and equipment selection process in major repairs of Auto Service motive powered vehicles. <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> Proper tool terminology (for example, box-end wrench, combination wrench, line wrench) in the Auto Service industry. <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> All types of air, power, and hand tools (for example, ratchets, impact gun, drill, pliers) used in the Auto Service industry Different tools and diagnostic equipment as it relates to different manufactures and brands (for example, Automobiles - Ford, Chevy, Dodge, Honda, Toyota, Nissan) in the Auto Service industry. 	<p>industry.</p> <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> Proper tool and equipment selection process in scheduled maintenance and major repairs (for example, alternative powered vehicle engine rebuilding, Light truck 4X4 front hub replacement, automobile fluid service replacement) in the Auto Service industry Interpretation of information retrieved from diagnostic equipment (scan tools, multi-meters) that will assist in Auto Service diagnosis. <p>Be able to use:</p> <ul style="list-style-type: none"> Different tools and diagnostic equipment as it relates to different manufacturers and brands (for example, Ford, GMC, Plymouth, Honda, Subaru, Toyota, Mazda) in the Auto Service industry Tools and equipment selection process in major repairs (light truck timing gear replacement, automobile standard transmission clutch replacement, solar powered vehicle battery pack replacement) in the Auto Service industry Specialty tools and equipment (for example, engine crane, engine stand, transmission jack, transmission stand) to replace motive powered vehicle engines in the Auto Service industry Specialty tools and equipment (for example,

	Transportation Technology Fundamentals	Transportation Technology Skills
		<p>flywheel puller, flywheel holder, piston ring compressor) to replace motive powered vehicle engine components in the Auto Service industry</p> <ul style="list-style-type: none"> • Specialty tools and equipment (for example, hoist, floor jack, axle stands, oil drain buckets, screwdrivers, wrenches, sockets) to perform regularly scheduled maintenance in the Auto Service industry • Advanced measuring devices to retrieve specific component readings (for example, compression tester, torque wrench, dial indicator, multi-meter) in the Auto Service industry.
Transportation Technology and The Environment	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • Legislation, regulations, and standards, relating to Government / Ministry guidelines as it relates to the Auto Service industry • Environmentally harmful gasses that are produced through combustion (for example, four stroke cycle engines, diesel engines, propane engines) and how the engine management systems control the level of emissions in the exhaust gas as it pertains to the Auto Service industry. <p>Be able to interpret and recognize:</p> <ul style="list-style-type: none"> • Recyclable materials (for example, automobile 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Government regulated emission testing, diagnosis, and repairs to meet applicable environment guidelines as it pertains to the Auto Service industry • Legal requirements and emission standards when servicing, repairing, and testing motive powered vehicles in the Auto Service industry <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Environmentally responsible practices during the design and manufacturing of a product in the Auto Service industry • Safe working practices and knowledge about how to perform scheduled maintenance of motive powered engine lubrication systems (for example, Proper

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>tires, coolant, batteries) used in the Auto Service industry.</p> <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> Government requirements / regulations on emission testing (Canadian Government's e-testing) as it pertains to the Auto Service industry. 	<p>service and disposal of used oil lubricants, coolant, brake fluid, gear oil) as it applies to the Auto Service industry.</p> <p>Be able to use:</p> <ul style="list-style-type: none"> Use Government regulated emission testing equipment to meet applicable environment guidelines Procedures and training required to prevent the release of ozone depleting materials and harmful substances (for example, R-12 Freon, electrolyte, fuel, hydraulic fluid) used in the Auto Service industry servicing and repair.
Transportation Technology and Society	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> Ways in which the Auto Service industry sector is affected by the social and cultural characteristics of the communities in which they operate (for example, socio-economic demographic of a community) The Social and Economic impact of the Auto Service industry activities in a community. <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> Ways in which the Auto Service industry sector is affected by the economic characteristics of the communities in which they operate (for example, age profile of community and requirements for 	<p>Be able to apply:</p> <ul style="list-style-type: none"> Professional networks to include local businesses, attractions and destinations, and post secondary programs to support learning and development through experiential learning in society (for example, guest speakers, job shadowing, volunteerism, donations) as it relates to the Auto Service industry. <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> An understanding of political, economic, cultural, and environmental issues impacting the Auto Service industry The effects of various types of energy sources to

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	<p>different types of outdoor recreation)</p> <ul style="list-style-type: none"> The impact of the Auto Service industry on Ontario's regional economies (for example, increased employment, new businesses). <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> Related industries affected by the Auto Service industry (for example, communities, hospitality and tourism, marinas). 	<p>power (for example, natural gas, bio-diesel, fry oil) in the Auto Service industry from a consumer's perspective.</p> <p>Be able to use:</p> <ul style="list-style-type: none"> Information about potential technologies to assist in advancing today's society (for example, providing new solar powered alternative vehicles for more efficient fuel economy) in the Auto Service industry.
Health and Safety	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> Specific components of legislation and standards related to workplace safety in the Auto Service industry Occupational Health and Safety Act [OHSA] Workplace Hazardous Materials Information System [WHMIS] Proper safety practices, housekeeping practices, lifting procedures, and fire prevention (spill cleanup, tripping hazards, equipment hazards) in the Auto Service industry Material Safety Data Sheets [MSDS] sheets as it pertains to the Auto Service industry Government mandatory graduating license requirement Government mandatory driving license requirement 	<p>Be able to apply:</p> <ul style="list-style-type: none"> Proper safety practices in the work environment to avoid injury (for example, safety guards are in place on pedestal grinder, equipment is secured properly, tire balancer cover) in the Auto Service industry. <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> Understanding and application of safe work procedures for using and maintaining materials, tools, and equipment in the Auto Service industry Understanding of the Occupational Health and Safety Act (for example, duties of employers, rights and responsibilities of workers) as it pertains to the Auto Service industry Follow legislation and regulations related to procedures and operations (for example, Workplace Hazardous Material Information, Material Data

	Transportation Technology Fundamentals	Transportation Technology Skills
	<ul style="list-style-type: none"> • Motive power driving safety requirements (for example, first aid kit, flares, tool box, extra oil, extra coolant, tow rope, extra warm clothes). <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • Skills and working conditions related to each profession in the Auto Service industry • Safety hazards (oil spills, fires, icy areas) in the work area and the ability to resolve these issues in the Auto Service industry <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • Common industry hazards as it pertains to the Auto Service industry • Occupational Health and Safety Act, mandatory Personal Protective Equipment and safe practices (for example, safety glasses, work gloves, hearing protection) as it pertains to the Auto Service industry • Potential health risks when working in the Auto Service industry (for example, Carbon monoxide, brake asbestos, used engine oil). 	<p>Safety Sheets) used in the Auto Service industry</p> <ul style="list-style-type: none"> • Mandated safety practices and good housekeeping skills (for example, work area cleanup, clear tripping hazards, oil spills) in the Auto Service industry working environment • Appropriate safety precautions when servicing and repairing (for example, high pressure in fuel system, excessive heat from exhaust system, touching hazardous materials) in the Auto Service industry. <p>Be able to use:</p> <ul style="list-style-type: none"> • Mitigate potential health risks (for example, use appropriate ventilation, hearing protection, gloves, safety glasses, steel toed boots, breathing protection) and demonstrate the use of safe procedures when working in the Auto Service industry • Specialty tools and equipment safety (for example, engine cranes, engine stand, transmission jack, transmission stand) in the Auto Service industry • Specialty tools and equipment to replace motive powered vehicle components (for example, flywheel puller, flywheel holder, piston ring compressor) in the Auto Service industry • Specialty tools and equipment (for example, hoist, floor jack, axle stands, ratchets, sockets, screw drivers, hammers) to perform regularly scheduled

	Transportation Technology Fundamentals	Transportation Technology Skills
		maintenance in the Auto Service industry.
Career Opportunities	<p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • Career opportunities in the Auto Service industry and the education and training required • The Interprovincial standards of Red Seal qualifications in the Auto Service industry • Ontario Youth Apprenticeship Program as it applies to the Auto Service industry and obtaining a Provincial license designation • Required work habits that are necessary to become successful (discipline, reliability, initiative) in the Auto Service industry • The Essential Skills as identified in the Ontario Skills Passport (for example, reading text, writing, document use, computer use, oral communication, numeracy, and thinking skills). <p>Be able to recognize and interpret:</p> <ul style="list-style-type: none"> • Professional associations relating to the Auto Service industry (for example, Ontario College of Trades) • Regulations regarding restricted and non-restricted skill sets in the Apprenticeship and Certification Act. <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • Describe a variety of career opportunities in the 	<p>Be able to apply:</p> <ul style="list-style-type: none"> • Apply knowledge of the employment process, develop resumes, cover letters and applications, as well as identify and use effective interviewing techniques within the Auto Service industry <p>Be able to demonstrate:</p> <ul style="list-style-type: none"> • Proper work habits (for example, safety, teamwork, organization) that will create success in the Auto Service industry <p>Be able to use:</p> <ul style="list-style-type: none"> • Up-to-date portfolio (a record of progress and work experience) that includes pieces of design work and other materials (for example, Ontario Skills Passport, Passport to Safety Certificate, technical reports, awards, reference letters) that provide evidence of skills and achievements in areas related to the Auto Service industry and explain why having a current portfolio is important for career development and advancement • Up-to-date resume, cover letter, and references, specifically directed towards the Auto Service industry / sector • Specific industry training or certificates that relate to the Auto Service industry

	Transportation Technology Fundamentals	Transportation Technology Skills
	<p>Auto Service industry (for example, service manager, service writer, tower operator, automotive service technician)</p> <ul style="list-style-type: none"> • Careers in post-secondary education pathways (for example, university, college, apprenticeship) relating to the Auto Service industry • Describe educational programs of study, the training certification(s) needed for entry into the various programs in the Auto Service industry • The Canadian Red Seal program and specific trade options within it that pertain to the Auto Service industry • Describe the regulations regarding restricted skill sets in the Apprenticeship and Certification Act as it relates to the Auto Service industry. 	<ul style="list-style-type: none"> • Specific hobbies that relate to the Auto Service industry.

Draft

Appendix 1

The *Ethical Standards for the Teaching Profession*

The *Ethical Standards for the Teaching Profession* represent a vision of professional practice. At the heart of a strong and effective teaching profession is a commitment to students and their learning. Members of the Ontario College of Teachers, in their position of trust, demonstrate responsibility in their relationships with students, parents, guardians, colleagues, educational partners, other professionals, the environment and the public.

The Purposes of the Ethical Standards for the Teaching Profession are:

- to inspire members to reflect and uphold the honour and dignity of the teaching profession
- to identify the ethical responsibilities and commitments in the teaching profession
- to guide ethical decisions and actions in the teaching profession
- to promote public trust and confidence in the teaching profession.

The Ethical Standards for the Teaching Profession are:

Care

The ethical standard of *Care* includes compassion, acceptance, interest and insight for developing students' potential. Members express their commitment to students' well-being and learning through positive influence, professional judgment and empathy in practice.

Respect

Intrinsic to the ethical standard of *Respect* are trust and fair-mindedness. Members honour human dignity, emotional wellness and cognitive development. In their professional practice, they model respect for spiritual and cultural values, social justice,

confidentiality, freedom, democracy and the environment.

Trust

The ethical standard of *Trust* embodies fairness, openness and honesty. Members' professional relationships with students, colleagues, parents, guardians and the public are based on trust.

Integrity

Honesty, reliability and moral action are embodied in the ethical standard of *Integrity*. Continual reflection assists members in exercising integrity in their professional commitments and responsibilities.

The Standards of Practice for the Teaching Profession

The *Standards of Practice for the Teaching Profession* provide a framework of principles that describes the knowledge, skills, and values inherent in Ontario's teaching profession. These standards articulate the goals and aspirations of the profession. These standards convey a collective vision of professionalism that guides the daily practices of members of the Ontario College of Teachers.

The Purposes of the Standards of Practice for the Teaching Profession are:

- to inspire a shared vision for the teaching profession
- to identify the values, knowledge and skills that are distinctive to the teaching profession
- to guide the professional judgment and actions of the teaching profession
- to promote a common language that fosters an understanding of what it means to be a member of the teaching profession.

The Standards of Practice for the Teaching Profession are:

Commitment to Students and Student Learning

Members are dedicated in their care and commitment to students. They treat students equitably and with respect and are sensitive to factors that influence individual student learning. Members facilitate the development of students as contributing citizens of Canadian society.

Professional Knowledge

Members strive to be current in their professional knowledge and recognize its relationship to practice. They understand and reflect on student development, learning theory, pedagogy, curriculum, ethics, educational research and related policies and legislation to inform professional judgment in practice.

Professional Practice

Members apply professional knowledge and experience to promote student learning. They use appropriate pedagogy, assessment and evaluation,

resources and technology in planning for and responding to the needs of individual students and learning communities.

Members refine their professional practice through ongoing inquiry, dialogue and reflection.

Leadership in Learning Communities

Members promote and participate in the creation of collaborative, safe and supportive learning communities. They recognize their shared responsibilities and their leadership roles in order to facilitate student success. Members maintain and uphold the principles of the ethical standards in these learning communities.

Ongoing Professional Learning

Members recognize that a commitment to ongoing professional learning is integral to effective practice and to student learning. Professional practice and self-directed learning are informed by experience, research, collaboration and knowledge.