



Ontario
College of
Teachers

Ordre des
enseignantes et
des enseignants
de l'Ontario

Additional Qualification Course Guideline Teaching Construction Technology - Electrical/Network Cabling

**Schedule F
Teachers' Qualifications Regulation**

August 2014

Ce document est disponible en français sous le titre *Ligne directrice du cours menant à la qualification additionnelle Câblage électrique et de réseau*, août 2014.

Additional Qualification Course Guideline

1. Introduction

The guideline for Teaching Construction Technology - Electrical/Network Cabling is organized using the following framework.



Diagram 1: Guideline Organization

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

The Additional Qualification Course: Teaching Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling as understood from a variety of contexts.

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

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 Construction Technology - Electrical/Network Cabling, 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 Construction Technology - Electrical/Network Cabling. 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 Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling.

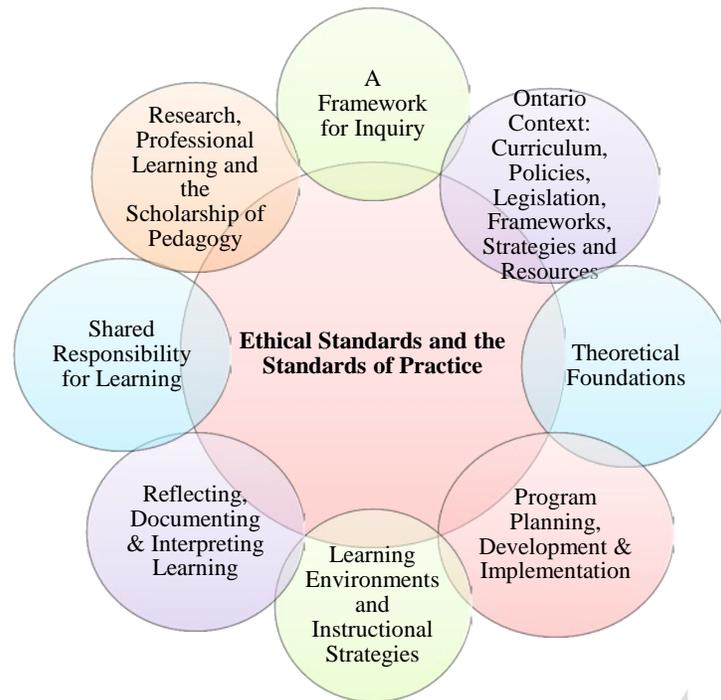


Diagram 2: Conceptual Framework for Teaching Construction Technology - Electrical/Network Cabling

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 Construction Technology - Electrical/Network Cabling

- 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 Construction Technology - Electrical/Network Cabling
- demonstrating an awareness of health and safety risks associated with Teaching Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling

- writing technical reports and creating and managing portfolios
- demonstrating mathematical literacy in Teaching Construction Technology - Electrical/Network Cabling
- demonstrating an understanding of business management and entrepreneurial practices related to Teaching Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling
- critically exploring the relationship between education, mental health and well-being
- identifying ways to modify expectations, instructional strategies and assessment practices in Teaching Construction Technology - Electrical/Network Cabling.

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

The Additional Qualification Course: Teaching Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling.

D. Theoretical Foundations of Teaching Construction Technology - Electrical/Network Cabling

- 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 Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling
- critically exploring the fundamental technological concepts in Teaching Construction Technology - Electrical/Network Cabling.

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 Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling
- applying the theoretical foundations of Teaching Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling.

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).

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 Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling

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 Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling. 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 Construction Technology - Electrical/Network Cabling, 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 Construction Technology - Electrical/Network Cabling
- c) Presentation: developing a digital story, presenting an issue related to the teaching and learning related to Teaching Construction Technology - Electrical/Network Cabling
- d) Portfolio: creating a portfolio of practical resources, artefacts, photographs and recording critical reflections for one or several components related to Teaching Construction Technology - Electrical/Network Cabling

- e) Action research: engaging in action research by reflecting and acting upon a specific inquiry into teaching practice related to Teaching Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling
- 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 Construction Technology - Electrical/Network Cabling 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 Construction Technology - Electrical/Network Cabling

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

| Construction Fundamentals | |
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| Materials, Processes and Components | <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • uses and features of common electrical construction materials (for example, panel boxes, breakers, cabling, utility boxes, switches, receptacles, lighting, connectors); • uses and features of common network cabling materials (for example, patch panels, cabling, switches, routers, utility boxes, switches, receptacles, lighting); • common electrical/network tools (for example, Robertson, Phillips and standard screwdrivers, lineman's pliers, wire strippers, cable crimpers, network cable testers); • understanding of physical/mechanical properties of various electrical materials (for example, Non-Metallic Sheathed Wires [NMD, NMW], Ground Fault Interrupter [GFI]); • proper installation of residential and basic commercial electrical devices in accordance with Ontario Electrical code and generally accepted wiring practices. • the process behind power generation, hydro distribution, three-wire distribution system, balanced and unbalanced systems. |
| Building Codes, Regulations and Standards | <p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • Ontario Electrical Safety Code as it pertains to residential and basic commercial practices; • building permits as they apply to the installation of electrical systems in residential and basic commercial settings; • electrical Safety Authority inspections as they apply to the installation of electrical systems in residential and basic commercial settings; • the Electricity Act and those portions relating to safety, |

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| | <p>residential and basic commercial settings.;</p> <ul style="list-style-type: none"> • electrical Contractors Association of Ontario standard practices of electrical contractors; • general knowledge of other regulatory, standards and employee negotiating bodies (for example, Electrical Contractor Registration Agency, Council of Ontario Construction Association); • Occupational Health and Safety as it pertains to electrical safety. |
| Building Systems | <p>Be able to describe:</p> <ul style="list-style-type: none"> • components making up electrical systems found in residential and basic industrial settings. (for example, service masts, meters, grounding collars and wiring, main circuit-breakers, circuit breaker breakout panels, various wiring, fixtures); • components making up a small business or home networking system(cabling, routers, switches, passive and active hubs, patch panels). <p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • how these components are installed to follow the regulations outlined in the Ontario Electrical Safety Code. |
| Design Considerations | <p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • selecting efficient cabling installations (for example, Avoiding wastage, locating features to minimize cabling requirements); • selecting equipment for hydro installations to meet specific requirements of the end user(for example, 200amp service vs. 100 amp, polyphase installations, magnetic relays, start-stop buttons, 220V plugs) • selecting features to meeting building usage(for example, Indirect lighting, spot lighting, conference room needs). |
| Terminology | <p>Use the correct terminology:</p> <ul style="list-style-type: none"> • to describe various components of an electrical system (for example, feed, load, three-way, distribution, GFI, hot, neutral, breakers) |

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| | <ul style="list-style-type: none"> used to identify the tools used in electrical/networking wiring practices (for example, needle nose, strippers, L16 connectors, marettes). |
| Design Layout and Planning Skills | |
| Design and Planning | <p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> consideration given to the concepts involved in design and planning (for example, ergonomics, aesthetics, function) in selection of electrical fixtures, cabling troughs, raceways and assemblies, lighting features) how to create simple sketches of layout with respect to electrical equipment using correct symbols and in accordance with regulations set out by Ontario Electrical Code. create wiring diagrams and circuit schematics using correct symbols to depict electrical equipment. how to create wiring solutions for residential and basic commercial installation needs. cabling needs to fulfill a small business or home network requirement. |
| Technical Drawings | <p>Be able to identify:</p> <ul style="list-style-type: none"> various electrical symbols used in residential and basic industrial wiring practices; read and interpret residential and light commercial blueprint drawings as they relate to electrical installations. <p>Be able to:</p> <ul style="list-style-type: none"> read, interpret and revise electrical schematics and wiring diagrams; read and interpret general construction/working drawings. <p>Be able to create:</p> <ul style="list-style-type: none"> basic wiring schematics and electrical wiring diagrams. |
| Using Technical Data | <p>Be able to interpret and create:</p> <ul style="list-style-type: none"> bill of material. |

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| | <p>Be able to use and interpret:</p> <ul style="list-style-type: none"> • Ontario Electrical Code regulations, reference manuals, electrical equipment manuals; • equipment data sheets(for example, specification sheets, equipment labels, color codes); • graphs, charts, and general reports related to electrical equipment operation, level readings, readings over time, summative reporting. <p>Be able to:</p> <ul style="list-style-type: none"> • communicate technical information through a variety of accepted methods(written, mathematically, verbal, graphic representation). |
| Mathematical Skills | <p>Be able to demonstrate an understanding of:</p> <ul style="list-style-type: none"> • rewriting algebraic equations (for example, Calculations for Ohm’s Law, Power in an electric Circuit, solving series circuits, solving parallel circuits); • trigonometry (power triangles, phase relationships, power factor); • graphing, making inference, slope of line; • Metric and Imperial systems; • estimating of costs, materials, time; • numerical fractions, decimals and methods used to convert from one to the other. |
| Fabrication, Assembly and Finishing Skills | |
| Technical Skills | <p>Be able to:</p> <ul style="list-style-type: none"> • properly secure all types of electrical cable to a surface; • install and properly terminate wiring and network cabling; • install main switches, breakers, fuses found in most residential and light commercial installations; • properly use hand power tools (for example, Power drill, jig saw, cut-off saw, bender, hole saw, reciprocating saw); • install electrical wiring branches in accordance to Ontario Electrical Code in homes and light commercial settings. |

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| | <ul style="list-style-type: none"> • install conduit, wiring troughs/trays using proper tools (for example, conduit bender,); • cut and install armored cable; • use appropriate safe measures in the installation of electrical equipment; • meter voltages, current and circuit resistance; • fault find (for example, shorts, opens, reversed polarity, bad connections, incorrect settings, ground loops, incorrect wiring). |
| Fabrication and Assembly | <p>Be able to:</p> <ul style="list-style-type: none"> • install electrical wiring and equipment in accordance with equipment specifications and working drawings (for example, location of fixtures, wiring installed with respect to Ontario Electrical Code requirements, equipment installation follows manufacturer's specifications and recommendations); • safely install electrical wiring and equipment in accordance to Ontario Electrical Code requirements. |
| Finishing | <p>Be able to:</p> <ul style="list-style-type: none"> • properly install electrical boxes in accordance to their suited purpose (for example, flush mount to drywall, seal for outdoor use, cover junction boxes) • properly install fixtures, plugs switches and other electrical equipment for aesthetic purposes. • install electrical wiring and network cabling for aesthetic purposes (for example, wiring channels, conduit, patch panels) • properly label all panels in accordance with Ontario Electric Code; • properly identify points on a patch panel for network cabling. |
| Technology and the Environment | <p>Be able to describe:</p> <ul style="list-style-type: none"> • how different modes of power generation affect the environment (for example, hydro-electric, coal fired, nuclear, wind farms, solar, bio mass, tidal) |

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| | <ul style="list-style-type: none"> • various ways in which a home can reduce their electrical utility consumption (for example, programmable thermostats, CFL and LED bulbs, Energy Star ratings, rechargeable systems); • methods to properly dispose of hazardous materials found in electric lamps (proper disposal of CFL bulbs, Fluorescent bulbs, fluorescent u-tubes, metal halide, fluomeric lamps, mercury vapour, sodium vapour); • recycling programs in place for various electrical and electronic equipments (for example, old electronics, small and large appliances, electrical wiring, motors). • the importance of the Ontario Green Energy Act. |
| Technology and Society | <p>Be able to identify, describe and demonstrate an understanding of:</p> <ul style="list-style-type: none"> • the economic and societal impact of the electrical industry (for example, job creation, catalyst to almost all areas of technology, changes to our world's infrastructure, growing demand for power usage; • how electricity has impacted on technological growth in general; • how our reliance on electricity has evolved and repercussions when we suffer from any extended loss in service; • how electrical systems can resolve current global issues (for example, electric cars vs. fuel driven, solar panels, electric heat); • how increased power demand has impacted on decisions to create new ways of generating power; • jobs created through the evolution of green energy and green energy projects. |
| Health and Safety | <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • those hazards related to the electrical field (for example, shock potential, the fatal current level, live circuits, concentric circles, wet conditions, proper meter settings, correct sizing of breakers, correct sizing of wires, correct sizing of fuses, selecting proper components for a given |

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| | <p>application);</p> <ul style="list-style-type: none"> • those regulations required for an electrical application (for example, Ontario Electrical Code, Electrical Safety Act, Workplace Safety and Insurance); • how to safely work on electrical equipment(for example, lockout, tagout, testing, removing power source, isolating, equipment information); • the importance of following an organizations safety policies and procedures. |
| Career Opportunities | <p>Be able to identify and describe:</p> <ul style="list-style-type: none"> • a variety of careers in the electrical/network cabling installation field(for example, electrician – residential, electrical maintenance, security systems, cable companies, lineman, electrician commercial, equipment testing); • how the number of electrical and electronic engineer make up the largest branch in engineering; • post-secondary pathways in electrical (for example, Trade related, college technician, technologist, engineering); • the employment growth rate in electrical fields attributed to societal need for increased power consumption; • those essential skill sets in electrical (for example, math, literacy, science, logic, manual skills) required for success at the post-secondary level. |

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.