

# ELECTRICAL TECHNIQUES- CONSTRUCTION AND MAINTENANCE APPRENTICESHIP

**Program:** ECAP

**Credential:** Ontario College Certificate

**Delivery:** Full-time

**Work Integrated Learning:** Apprenticeship Placement

**Length:** 840 hours

**Effective:** Fall 2023

**Location:** Midland

## Description

Graduates of this program gain basic knowledge of electrical functions within a controlled electrical environment during in-school apprenticeship training. Students focus primarily on theoretical knowledge and essential skills required to support the performance objectives of the Apprenticeship Training Standards. Practical components of the in-school program reinforce theoretical knowledge related to:

- Canadian Electrical Code (Level 1, 2 & 3)
- Prints (Level 1, 2 & 3)
- Electrical Theory (Level 1, 2 & 3)
- Installation Methods (Level 1, 2 & 3)
- Instrumentation (Level 1, 2 & 3)
- Electronics (Level 1, 2 & 3)
- Monitoring & Communication Systems (Level 2)

An Electrician-Construction and Maintenance plans, assembles, connects, installs, repairs, inspects, tests, verifies, and maintains electrical systems in various settings (i.e., residential, commercial, institutional, industrial). The apprentice measures, cuts, threads, bends, assembles and installs conduits, electrical conductor enclosures and supports. Electrical systems include heating, lighting, power, communication, control, security systems and renewable energy and energy storage systems.

Electrician-Construction and Maintenance is a trade regulated by the Ontario College of Trades and Apprenticeship Act, 2009. Qualified individuals may obtain a Certificate of Qualification, which confirms its holder has the skills, knowledge and experience that meet industry standards of practice for the trade.

In order to complete an apprenticeship training program in the trade, individuals must become members of the Ministry of Labour, Training and Skills Development, and apprentices must remain active members for the duration of their apprenticeship.

## Career Opportunities

At this point in their training, graduates may find employment as apprentices in residential and commercial buildings, the manufacturing sector, as assemblers, testers, or as salespersons for an electrical parts supplier. Industries that employ electrical apprentices include electrical construction firms, primary steel producers, motor vehicle manufacturers,

motor vehicle parts manufacturers, electrical power companies, and mining companies.

## Program Learning Outcomes

The graduate has reliably demonstrated the ability to:

1. assist in the interpretation and preparation of electrical drawings including other related documents and graphics;
2. analyze and solve simple technical problems related to basic electrical systems by applying mathematics and science principles;
3. use and maintain test and instrumentation equipment;
4. assemble basic electrical circuits and equipment to fulfill requirements and specifications under the supervision of a qualified person;
5. assist in the installation and troubleshooting of basic electrical machines and associated control systems under the supervision of a qualified person;
6. assist in testing and troubleshooting electrical and electronic circuits, equipment, and systems by using established procedures under the supervision of a qualified person;
7. assist in the troubleshooting of control systems under the supervision of a qualified person;
8. use computer skills and tools to solve basic electrical related problems;
9. assist in conducting quality assurance procedures under the supervision of a qualified person;
10. assist in the preparation and maintenance of records and documentation systems;
11. install and assist in testing telecommunication systems under the supervision of a qualified person;
12. apply health and safety standards and best practices to workplaces;
13. perform tasks in accordance with relevant legislation, policies, procedures, standards, regulations, and ethical principles;
14. apply basic electrical cabling requirements and install and test system grounding for a specified number of applications under the supervision of a qualified person;
15. identify problems and troubleshoot electrical systems under the supervision of a qualified person;
16. assist in the selection of electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person.

## External Recognition

Upon successful completion of the Level 3 in-school training, apprentices must complete the remainder of their 8,160 hours of on-the-job training to become competent in the required skills (as outlined in the Apprenticeship Training Standard) and qualify for their Apprenticeship Certificate. Thereafter, they are eligible to write their Certificate of Qualifications exam for this Red Seal Trade. Graduates may be able to receive credit toward further education in related post-secondary diploma, advanced diploma, or degree programs.

## Admission Requirements

- Ontario Secondary School Diploma (OSSD) or equivalent, mature student status

- Prospective students must be registered apprentices with the Ministry of Labour, Training, and Skills Development

## Additional Information

An apprenticeship training program consists of on-the-job and in-school training.

An apprenticeship involves practical training provided on-the-job by a skilled worker, or trainer. The skills or competencies to be developed are set out by the trade's Apprenticeship Training Standard and are recognized by the industry as being essential to the practice of the trade.

As these essential skills are developed, the apprentice's sponsor or trainer signs the relevant sections of the training standard to indicate that the apprentice has met the individual training objectives by demonstrating the skills required of a skilled worker, or journeyman, in the trade.

## Graduation Requirements

Students must successfully complete all three levels to receive a certificate.

- Electrician Level 1- Basic (ECMB)
- Electrician Level 2- Intermediate (ECMI)
- Electrician: Construction and Maintenance Apprenticeship Level 3- Advanced (ECMA)

## Graduation Eligibility

Students must successfully complete all required courses as noted below. Further details, if applicable, are noted under "Additional Information" above.

## Program Tracking

### Level 1- Basic (ECMB)

Program Courses	Hours
ELAB 1000 Canadian Electrical Code	33
ELAB 1001 Prints	30
ELAB 1002 Electrical Theory	63
ELAB 1003 Installation Methods	48
ELAB 1004 Instrumentation	24
ELAB 1005 Electronics	42
<b>Hours</b>	<b>240</b>
<b>Total Hours</b>	<b>240</b>

### Level 2 - Intermediate (ECMI)

Program Courses	Hours
ELAI 1000 Canadian Electrical Code - Intermediate	39
ELAI 1001 Prints - Intermediate	30
ELAI 1002 Electrical Theory - Intermediate	81
ELAI 1003 Installation Methods - Intermediate	39
ELAI 1004 Instrumentation - Intermediate	42
ELAI 1005 Electronics - Intermediate	39
ELAI 1006 Monitoring and Communication Systems	30
<b>Hours</b>	<b>300</b>
<b>Total Hours</b>	<b>300</b>

### Level 3 - Advanced (ECMA)

Program Courses	Hours
ELAA 1000 Canadian Electrical Code - Advanced	30
ELAA 1001 Prints - Advanced	30
ELAA 1002 Electrical Theory - Advanced	60
ELAA 1003 Installation Methods - Advanced	81
ELAA 1004 Instrumentation - Advanced	39
ELAA 1006 Electronics - Advanced	60
<b>Hours</b>	<b>300</b>
<b>Total Hours</b>	<b>300</b>

Code	Title
ELAA 1008	Electrician-Const Exam Prep

**Disclaimer:** *The information in this document is correct at the time of publication. Academic content of programs and courses is revised on an ongoing basis to ensure relevance to changing educational objectives and employment market needs.*

*Program outlines may be subject to change in response to emerging situations, in order to facilitate student achievement of the learning outcomes required for graduation. Components such as courses, progression, coop work terms, placements, internships and other requirements may be delivered differently than published.*