Area of Interest: Construction and Skilled Trades

Electrical Techniques

Ontario College Certificate

Program Code: 1532X01FWO

1 Year

Ottawa Campus

Our Program

Power up your skills to start your electrical career.

The one-year Electrical Techniques Ontario College Certificate program offers a comprehensive curriculum designed to provide you with the foundational knowledge and practical skills necessary to embark on an entry-level career in the electrical industry. This program covers a wide range of essential topics, including basic electrical theory, safety procedures, blueprint reading, and wiring techniques. Through a combination of classroom instruction, hands-on labs, and real-world projects, you acquire the ability to install, maintain, and troubleshoot electrical systems in residential, commercial, and industrial settings, while adhering to industry standards and regulations. This program aligns with Level 1 of the 309A Construction and Maintenance Electrician Apprenticeship in-school component. Graduates may apply for exemption from the in-school component of the Level 1 apprenticeship.

With a focus on experiential learning and industry relevance, you gain practical experience working with electrical components, tools, and equipment commonly used in the field. You develop proficiency in tasks such as circuit wiring, electrical testing, and equipment installation under the guidance of experienced instructors. Upon completion of the program, graduates are equipped with the skills and certification necessary to pursue entry-level positions as apprentices or assistants in the electrical industry, laying a solid foundation for further specialization and advancement in their careers as Construction and Maintenance Electricians. Graduates may find employment within a wide range of work environments and industries, such as:

- Construction
- Maintenance and Repair
- Manufacturing
- Renewable Energy
- Utilities
- Telecommunications
- Facilities Management
- Residential Services
- Commercial Services
- Industrial Services

Employment

Graduates of the Electrical Techniques program will be prepared to pursue entry-level positions in various sectors of the electrical industry, including Electrical Apprentice and Technical sales.

Learning Outcomes

The graduate has reliably demonstrated the ability to:

- Perform duties under supervision in accordance with workplace regulations.

- Assist in the preparation, maintenance and storage of electrical drawings and records to ensure the integrity of the information and workflow control.

- Assist in the identification and troubleshooting of basic electrical issues to support reliable system operation in compliance with industry standards.

- Use and maintain instrumentation equipment in accordance with manufacturer's recommendations.

- Assist in the assembly and maintenance of electrical and electronic, circuits and components according to project specifications.

- Assist in the installation and troubleshooting of basic electrical machines and power systems to maintain operational integrity and safety.

- Assist in conducting quality assurance or control procedures for electrical systems and components to ensure reliability and compliance.

- Apply basic electrical cabling requirements, install and test system grounding and bonding, and assist in the selection of electrical equipment to support safe and compliant system operation.

- Comply with workplace best practices, health and safety standards to maintain efficient, safe and secure operations.

- Assist in the installation and troubleshooting of communication systems to maintain operational integrity and safety.

- Perform tasks in compliance with relevant legislation, industry standards, and ethical principles to support safety, efficiency, and sustainability in the electrical workplace.

- Identify and apply discipline-specific practices that contribute to the local and global community through social responsibility, economic commitment and environmental stewardship.

Program of Study

Level: 01	Courses	Hours
DAT8942	Computer Applications - Electrical	42.0
ELE0011	Canadian Electrical Code I	28.0
ELE0012	Trade Practices	42.0
ELE0013	Installation and Maintenance Methods I	70.0
ELE0014	Electrical Fundamentals I	42.0
ENL1813T	Communications I	42.0
MAT7014W	Applied Mathematics for the Trades 1	28.0
Level: 02	**Courses**	**Hours**
ELE0021	Canadian Electrical Code II	42.0
ELE0022	Installation and Maintenance Methods II	70.0
ELE0023	Electrical Fundamentals II	42.0
ELE0024	Drawings, Standards and Specifications	42.0

MAT7015W	Applied Mathematics for the Trades 2	28.0
SAF0020	Construction Site Safety	56.0
GED1532	General Education Elective	42.00

Fees for the 2025/2026 Academic Year

Tuition and related ancillary fees for this program can be viewed by using the Tuition and Fees Estimator tool at https://www.algonquincollege.com/fee-estimator

Further information on fees can be found by visiting the Registrar's Office website at https://www.algonquincollege.com/ro

Fees are subject to change.

Additional program related expenses include:
Textbooks, safety glasses, and safety boots, cost approximately $1,300. There will be an Ancillary fee in level 02 of approximately $800 for heights, elevated heights, and CPR training.

Admission Requirements for the 2026/2027 Academic Year

College Eligibility

- Ontario Secondary School Diploma (OSSD) or equivalent;

- Mature Student status (19 years of age or older and without a high school diploma at the start of the program). Eligibility may be determined by academic achievement testing, for which a fee will be charged.

Program Eligibility

- English Grade 12 (ENG4C or equivalent).

- Mathematics Grade 12 (MAP4C or equivalent).

- Applicants with international transcripts must provide proof of the subject specific requirements noted above and may be required to provide proof of language proficiency. Domestic applicants with international transcripts must be evaluated through the International Credential Assessment Service of Canada (ICAS) or World Education Services (WES).

- IELTS-International English Language Testing Service (Academic) Overall band of 6.0 with a minimum of 5.5 in each band; OR TOEFL-Internet-based (iBT)-overall 80, with a minimum of 20 in each component: Reading 20; Listening 20; Speaking 20; Writing 20; OR Duolingo English Test (DET) Overall 110, minimum of 110 in Literacy and no score below 95.

Application Information

ELECTRICAL TECHNIQUES
Program Code 1532X01FWO

Applications to full-time day programs must be submitted with official transcripts showing completion of the academic admission requirements through:

ontariocolleges.ca
60 Corporate Court
Guelph, Ontario N1G 5J3
1-888-892-2228

Applications are available online https://www.ontariocolleges.ca/ .

Applications for Fall Term and Winter Term admission received by February 1 will be given equal consideration. Applications received after February 1 will be processed on a first-come, first-served basis as long as places are available.

International applicants applying from out-of-country can obtain the International Student Application Form at https://algonquincollege.my.site.com/myac360/s/self-registration-page or by contacting the Registrar's Office.

For further information on the admissions process, contact:

Registrar's Office
Algonquin College
1385 Woodroffe Ave
Ottawa, ON K2G 1V8
Telephone: 613-727-0002
Toll-free: 1-800-565-4723
TTY: 613-727-7766
Fax: 613-727-7632
Contact: https://www.algonquincollege.com/ro

Additional Information

Students must maintain a minimum grade of 60% in each course to meet the requirements for exemption of the in-school component of the Level 1 Construction and Maintenance Electrician apprenticeship program.

Contact Information

Program Coordinator(s)

- Andrew Meek, mailto:meeka@algonquincollege.com ,

Course Descriptions

DAT8942 Computer Applications - Electrical

Students are introduced to the College computer network, spreadsheet applications, word processing software and electrical design software, including Multisim electronic workbench and AutoCAD. Focus is on AutoCAD, in particular electrical applications.

Prerequisite(s): none
Corerequisite(s):none

ELE0011 Canadian Electrical Code I

The Canadian Electrical Code (CEC) is the authoritative standard for electrical installations in Canada, outlining the requirements and regulations necessary to ensure the safety and reliability of electrical systems. Students examine the regulatory framework, developing a fundamental knowledge of the principles, guidelines, and applications. Students interpret the CEC requirements for residential electrical devices to ensure safety and compliance.

Prerequisite(s): none
Corerequisite(s):none

ELE0012 Trade Practices

The electrical industry relies heavily on regulations, best practices, and professional standards to improve the quality and efficiency of work. Students analyze the role of safety relating to the electrical profession including regulations, standards, safe work practices, lock out and tag procedures, Personal Protective Equipment (PPE), working conditions and environmental influences. Students also examine trade-specific tools and equipment relating to their use and maintenance.

Prerequisite(s): none
Corerequisite(s):none

ELE0013 Installation and Maintenance Methods I

Practical skills are essential for safely and effectively installing and maintaining electrical systems, ensuring competence and proficiency. Students explore the fundamental principles, techniques, and practices involved in electrical installation and maintenance. Students delve into the foundational concepts of electrical systems, learning about the components, tools, and safety protocols essential for successful installations and ongoing maintenance. Students engage in hands-on exercises, simulations, and practical demonstrations to reinforce theoretical concepts and develop proficiency in electrical installation and maintenance methods.

Prerequisite(s): none
Corerequisite(s):none

ELE0014 Electrical Fundamentals I

To perform safely, efficiently, and competently in the field, it is necessary to understand the basic principles, laws, and components of electricity. Students develop a solid foundation in the primary principles and concepts of electricity providing a comprehensive overview of the essential theoretical knowledge required for understanding electrical systems and circuits. Students engage in theoretical discussions and problem-solving exercises to reinforce their understanding of electrical fundamentals acquiring the knowledge and skills necessary to analyze basic electrical circuits, understand electrical phenomena, and apply fundamental principles to practical electrical applications.

Prerequisite(s): none
Corerequisite(s):none

ELE0021 Canadian Electrical Code II

The Canadian Electrical Code (CEC) sets the requirements relating to the installation and maintenance of electrical equipment and systems in Canada. Students interpret the CEC requirements pertaining to the installations for common residential, commercial, and industrial systems. Code compliance exists to promote overall safety as well as fire and shock hazards. The CEC is also used to calculate conductor and overcurrent device sizes required for specific continuous and non-continuous loads and the minimum ampacity of conductors and overcurrent devices for residential, commercial, and industrial systems.

Prerequisite(s): none
Corerequisite(s):none

ELE0022 Installation and Maintenance Methods II

The ability to troubleshoot, repair, and optimize electrical systems, supports success in the field. Students explore more advanced concepts, techniques, and practices essential for proficient electrical professionals. Students expand their understanding of electrical systems and develop specialized skills required for installations, maintenance, and troubleshooting tasks. Students engage in practical applications and projects to reinforce theoretical concepts and develop practical skills and competencies necessary for entry in the field of electrical installation and maintenance.

Prerequisite(s): none
Corerequisite(s):none

ELE0023 Electrical Fundamentals II

Knowledge of more advanced electrical topics are crucial for competent and safe practice as electrical technicians. Building upon previous concepts, students explore more advanced electrical applications in relation to residential, commercial, and industrial settings. Topics include alternating current (AC) theory, three-phase power systems, and electrical machinery, equipping students with the knowledge needed to work with complex electrical systems. Students apply theories, principles, concepts, and techniques relating to the application of electrical systems.

Prerequisite(s): none
Corerequisite(s):none

ELE0024 Drawings, Standards and Specifications

The ability to understand trade drawings ensures accurate comprehension of wiring diagrams, circuit layouts, and architectural plans, enabling precise installation, troubleshooting, and maintenance of electrical systems according to specifications and safety standards. Students develop the necessary skills and knowledge to interpret and utilize electrical drawings, adhere to industry standards, and understand specifications in the context of construction projects. Students apply knowledge of electrical drawings, standards, and specifications to effectively interpret and manage electrical drawings in professional settings, ensuring compliance with industry standards and project requirements.

Prerequisite(s): none
Corerequisite(s):none

ENL1813T Communications I

Communication remains an essential skill sought by employers, regardless of discipline or field of study. Using a practical, vocation-oriented approach, students focus on meeting the requirements of effective communication. Through a combination of lectures, exercises, and independent learning, students practise writing, speaking, reading, listening, locating and documenting information and using technology to communicate professionally. Students develop and strengthen communication skills that contribute to success in both educational and workplace environments.

Prerequisite(s): none
Corerequisite(s):none

GED1532 General Education Elective

Students choose one course, from a group of general education electives, which meets one of the following five theme requirements: Arts in Society, Civic Life, Social and Cultural Understanding, Personal Understanding, and Science & Technology.

Prerequisite(s): none
Corerequisite(s):none

MAT7014W Applied Mathematics for the Trades 1

Mastery of mathematical theories is essential for success in the construction industry. Students practise performing technical calculations effectively and efficiently and examine trades calculations based on basic math skills, fractions, percentage and the Pythagorean Theorem. Using numerical equations and word problems, students also perform perimeter, area and volume calculations based on a variety of geometric shapes.

Prerequisite(s): none
Corerequisite(s):none

MAT7015W Applied Mathematics for the Trades 2

Accurate and efficient use and estimation of time and materials is essential within the construction industry. Students utilize applied mathematics to calculate costs of labour and materials in the preparation of estimates for residential construction projects and apply industry standards relating to allowance for material and time allotments for labour.

Prerequisite(s): none
Corerequisite(s):none

SAF0020 Construction Site Safety

Worksite safety knowledge allows electricians to recognize and mitigate potential hazards, promoting a safer work environment for themselves and others. Safety orientation and training include OHSA (Occupational Health and Safety Act), WHMIS (Workplace Hazardous Materials Information System), and jobsite safety and risk. Students examine how corporate safety programs are structured, along with the employee's roles and responsibilities within those programs.

Students complete the incorporated Standard First Aid and CPR-C and Working at Heights certifications.

Prerequisite(s): none
Corerequisite(s):none