

We acknowledge and respect that we are gathered on the traditional lands of the Anishnaabe People of Turtle Island and proudly recognize our local host Atikameksheng Anishnawbek. We also recognize the contributions of Wahnapiatae First Nation and the Metis Nation of Ontario.

Course Title	Electrical for Trades and Tech				
Course Code:	ELN1122	Credit Value:	3	Credit Hours:	42
Programs:	EEDC Electrical For Trades And Tech PRET Pre - Trades/Technology				
Equivalencies		Prerequisites		Corequisites	

This course may be delivered in a variety of different formats: 100% in-class, 100% online (or a blend of both), videoconferencing, distributed learning or off-campus. Please confirm with your faculty member which format will be used for your section of this course.

General Education Course: ☐ Eligible for PLAR: ☒
Degree Breadth Course: ☐ Experiential Learning: ☐
Research Intensive Course Designation: ☐

COURSE DESCRIPTION

In this course, students will explore the basics of electricity to develop an understanding and respect for the hazards when working with electrified devices. Students will study Ohm's Law as it applies to voltage, current and resistance, and will construct both series and parallel circuits containing a variety of electrical components. Electrical production (generators and solar) and storage will be studied. Students will become comfortable with the usage of multimeters to test circuits, and will become proficient in reading and creating circuit diagrams.

Date: May 28, 2026

Alison Caruso

Approved by: _____

ALISON CARUSO
Chair, Schools Of Engineering Tech & Enviro.
Studies, Schools Of Skilled Training, Engineering
Technology & Environmental Studies

Effective: Fall 2026, Winter 2027, Spring 2027

RELATIONSHIP TO PROGRAM VOCATIONAL LEARNING OUTCOMES

PROGRAM LEVEL	
This course contributes to your program by allowing you to demonstrate the following vocational learning outcomes:	
Program(s)	Vocational Learning Outcomes
Pre-trades/Technology	College Standards 1. Apply basic mathematical, physical, and chemical concepts to the performance of assigned tasks. 2. Contribute to the collection, processing, and interpretation of technical data related to projects. 3. Analyze and solve technical problems by applying principles of mathematics and science. 4. Build, design, analyze, test and troubleshoot circuits, equipment, and systems. 5. Interpret, translate, analyze, and produce drawings and other related technical documents. 6. Apply knowledge of appropriate safety procedures and standard shop practices.

COURSE CURRICULUM**Topics/Concepts Covered in This Course**

- Basics of electricity including static
- Electrical safety
- Ohm's law of current, voltage and resistance
- Electrical power and consumer cost
- Current electricity: series vs parallel circuits and circuit diagrams
- Specialized electrical components: transistors, diodes, photovoltaics etc
- Electricity production and storage

COURSE LEVEL: Learning Outcomes and Objectives	
To earn credit for this course, you must reliably demonstrate your ability to:	
Learning Outcome	Objectives
1. explain electricity and how it behaves	1.1 Discuss the theory behind electricity, focusing on atomic particles such as electrons and protons 1.2 determine how static electricity is formed, and how it can harm circuits 1.3 Explain how electricity can be generated and used to create work 1.4 Construct an electrochemical cell and test for voltage and current output.

Learning Outcome	Objectives
2. work responsibly and safely with electrified devices	2.1 Identify the hazards associated with working with electricity 2.2 Identify the personal protective equipment that should be worn when working with electricity
3. explain the mathematical concepts governing electrical behaviour including Ohm's Law and Power, and determine how electrical energy is billed to a consumer.	3.1 Study the theory of Ohm's Law, relating it to current, voltage and resistance 3.2 Analyze, diagnose and solve mathematical problems using Ohm's Law, as applied to the flow of electricity in a circuit 3.3 Use the concept of Power drawn by a load (appliance) to determine the actual rate of electrical consumption. 3.4 Study how an electrical utility bills a consumer for electrical usage.
4. construct and diagram electrical circuits with appropriate symbols and conventions	4.1 Examine the behaviour of electricity in a completed circuit 4.2 Differentiate between electron flow and conventional current conventions 4.3 Develop comfort with the usage of multimeters to detect current, voltage and resistance in a circuit 4.4 Compare and contrast series, parallel and combined circuits 4.5 Identify components found in modern electronics (transistors, diodes, transformers, rectifiers, etc) matching function with construction

Essential Employability Skills

Communication

- respond to written, spoken, or visual messages in a manner that ensures effective communication.

Numeracy

- execute mathematical operations accurately.

Critical Thinking and Problem Solving

- apply a systematic approach to solve problems.
- use a variety of thinking skills to anticipate and solve problems.

Information Management

- not applicable

Interpersonal

- interact with others in groups in ways that contribute to effective working relationships.

Personal

- manage the use of time and other resources to complete projects.

Delivery Method

- Classroom: Course is delivered through scheduled synchronous teaching that may be face-to-face and/or virtual.

Learning Activities

- Lectures
- Labs
- Group Work
- In-Class Exercises

Resources Required

Additional Supplies

30 cm metal ruler

Estimated Cost: 5

Scientific Calculator

Estimated Cost: 20

Safety glasses

Estimated Cost: 10

Evaluation Plan

Grading Scheme

A	80% - 100%
B	70% - 79%
C	60% - 69%
F	0% - 59%

Evaluation Method	Value (%)
Test/Exam	40%
2 tests, 20% each	
Applied Activities (G)	35%
7 labs, 5% each	
Assignments	20%
4 assignments, 5% each	
Professional Conduct	5%
Students are expected to attend class on time and prepared for the class activities, which includes appropriate PPE, tools, and lab/class documents.	

ADDITIONAL INFORMATION

A course outline is the College's commitment to the students. It supports educators, students, employers, and external partners in determining the depth of knowledge and level of performance that a student will be able to demonstrate upon successful completion of a course. Both instructor and student are obligated to follow the content of the course outline. It is your responsibility to meet these outcomes as assigned.

Note: You should maintain a copy of this course outline for your records. You may require this course outline if you seek transfer credits or further studies at other institutions.

Cambrian Email Addresses

All email correspondence with currently registered students must be via the students' College-issued email, as per the College's [IT Acceptable Use Policy](#). Students must familiarize themselves with the IT Acceptable Use Policy, as it outlines the acceptable use of College information systems and technology, and mitigates risks to the College's IT infrastructure.

Bring Your Own Device (BYOD) and Apps Anywhere

Cambrian College is a BYOD institution, which means that students bring the device of their choice that meets program-specific minimum technology requirements. Program-specific minimum technology requirements can be viewed on program pages on the Cambrian College website. AppsAnywhere is an easy-to-use app store-like platform providing students with a way to access their College apps and software on demand, anywhere, anytime both on and off campus. These both enrich the student learning experience in and out of the classroom, while providing maximum flexibility.

Policies

It is the student's responsibility to be aware of the College's policies. Policies, procedures and forms can be found on the [College website](#).

Academic and Student Services

Cambrian has a variety of student and academic services to support students during their academic journey at the College.

- [Academic Integrity Office](#)
- [Academic Success Centre](#)
- [Bookstore and Campus Store](#)
- [International Student Support Services](#)
- [KPMG Pride Centre](#)
- [Career Centre](#)
- [Registrar's Office \(Enrolment Centre\)](#)
- [First Step Centre](#)
- [Accessibility Services](#)
- [Library](#)
- [Pathways](#)
- [Available Scholarships and Bursaries](#)
- [Cambrian Student Council \(CSC\)](#)
- [Cambrian Indigenous Student Circle \(CISC\)](#)
- [Cambrian Athletic Association \(CAA\)](#)
- [Student Life Centre](#)
- [Test Centre](#)
- [The Learning Centre \[Tutoring Services\]](#)
- [Wabnode Centre for Indigenous Services](#)
- [Women's Resource Centre](#)

Copyright

Copyright is the exclusive legal right given to a creator to reproduce, publish, sell, or distribute his/her work. All members of the Cambrian community are required to comply with Canadian copyright law, which governs the reproduction, use and distribution of copyrighted materials. This means that the copying, use and distribution of copyright-protected materials, regardless of format, are subject to certain limits and restrictions. For example, activities such as photocopying or scanning an entire textbook or uploading class materials to a course sharing site are prohibited.

See the [Cambrian Library website](#) for additional information regarding copyright and for details on allowable limits.

Audio/Visual Capture

Sounds and images from this class, and contributions made by a participant, virtually or in-person, are recorded under the authority of the *Ontario Colleges of Applied Arts and Technology Act, 2002*. The main purpose of these recordings is to allow students enrolled in the course to review content and engage in activities, whether they attend any given class in person, virtually, or at all. Class recordings are for personal use only and shall not be shared or transferred. Faculty may also review these recordings to prepare for future classes, evaluate students, collaborate in program reviews, or provide feedback to faculty and/or students. Any questions about the use of multimedia recordings may be addressed to your respective Dean.

Equity, Diversity, and Inclusivity

Cambrian is committed to building and preserving an equitable, diverse, and inclusive learning community where students, faculty, and staff may achieve their full potential in an environment characterized by equality of respect and opportunity. All students and employees have the right to live and work in an environment that is free from discrimination and harassment. Therefore, Cambrian College will not tolerate any form of discrimination or harassment in its employment, education, accommodation, or business dealings. For more information, please visit: [Equity, Human Rights, and Accessibility](#).

Prior Learning Assessment and Recognition (PLAR)

Students wishing to have work or life experience that meets course learning outcomes considered for credit through Prior Learning Assessment and Recognition should email the Enrolment Centre at records@cambriancollege.ca.

Transfer Credit

Students wishing to have courses from other programs or institutions assessed for equivalency and/or transfer credit should visit the [Transfer Credits page](#) on the Cambrian website. The student should maintain a copy of this course outline for their records. Students may require this course outline if seeking transfer credits or further studies at other institutions.

Test Proctoring at Cambrian

Many courses include major tests and/or final exams. The practice at Cambrian requires that these types of test situations involve proctoring to ensure academic integrity. Online tests/exams may employ a proctoring services to enable you to take your exam from a location of your choosing within a period specified by your instructor. When you are taking an online test/exam, the proctoring service may capture your video, screen, audio, and web surfing data to protect academic integrity. Cambrian College collects, uses, discloses, and retains personal information in compliance with the *Freedom of Information and Protection of Privacy Act (FIPPA)*. Your personal information is being collected under the authority of the *Ontario Colleges of Applied Arts and Technology Act S.O. 2002, c.8, Sched. F*. This information will be used for the purpose of administering a test/exam through an online proctoring service acting as an authorized agent of the College. Please refer to Cambrian's [Official Student Records Policy](#) for more details. If you have any questions regarding the collection of your personal information, please contact Vice President Academic, Cambrian College, 1400 Barry Downe Rd., Sudbury ON P3A 3V8, 1-705-566-8101 ext. 6245.

Schools of Skilled Training, Engineering Technology & Environmental Studies Regulations

Lab Attendance

This course includes a mandatory lab component. The grading in this course will include the evaluation of lab reports and performance during labs.