Cambrian College

Schools of Skilled Training, Engineering Technology & Environmental Studies
Course Outline

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 Wahnapitae First Nation and the Metis Nation of Ontario.

Course Title	Electrical CAD				
Course Code:	CAD1002	Credit Value:	2	Credit Hours:	28
Programs:	COEE Common Electrical Engineering EETN Electrical Engineering Technician - Industrial EETY Electrical Engineering 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 hands-on use of computer-aided drafting using AutoCAD Electrical. Students will have the opportunity to construct and modify drawings, explore the use of layers, dimensioning, hatching, and the creation and use of blocks and or symbols. Using AutoCAD Electrical, students will design and produce course-standard electrical drawings, using wires, electrical components and related drawing tools.

Date: May 26, 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**
Electrical Engineering Technician - Industrial	**Ministry Standards** 1. Interpret and produce electrical and electronics drawings including other related documents and graphics. 2. Use computer skills and tools to solve routine electrical related problems. 3. Prepare and maintain records and documentation systems. 4. Apply health and safety standards and best practices to workplaces.
Electrical Engineering Technology	**Ministry Standards** 1. Analyze, interpret, and produce electrical and electronics drawings, technical reports including other related documents and graphics. 2. Use computer skills and tools to solve a range of electrical related problems. 3. Prepare reports and maintain records and documentation systems. 4. Apply and monitor health and safety standards and best practices to workplaces. 5. Perform and monitor tasks in accordance with relevant legislation, policies, procedures, standards, regulations, and ethical principles. 6. Select and recommend electrical equipment, systems and components to fulfill the requirements and specifications under the supervision of a qualified person.

COURSE CURRICULUM

Topics/Concepts Covered in This Course

- AutoCAD Basic standard setup, metric and imperial units, limits, layers and related templates
- Working with ribbons, using toolbars, various menus and command Line options
- Starting a new drawing, opening an existing drawing template, or creating a simple Title Block using the Text command options, within limits and unit choice.
- Creating the necessary Drafting Settings using selected drawing guidelines.
- Creating & saving Draw Commands for future drawings from the template settings. Creating lines & their properties using the Toolbar selections. Creating the line types, line weights and transparency.
- Using the edit commands, modify, erase, delete, nudge, copy, break, commands making changes to the drawing as required.
- Creating, editing, blocking and inserting common electrical, electronic and instrumentation symbols using the Design Centre.

Topics/Concepts Covered in This Course

- How to plot/print a document. Using monochrome, transparency window and other commands print out a drawing for evaluation.
- Working with the AutoCAD Electrical Schematic interface - wires, ladders and multiple bus.
- Selecting, creating, editing and blocking common electrical, electronic and instrumentation symbols using the Icon Library and Symbol Builder.
- Designing and producing ladder and wiring diagrams related to ELC 1125 Labs

COURSE LEVEL: Learning Outcomes and Objectives	
To earn credit for this course, you must reliably demonstrate your ability to:	
Learning Outcome	**Objectives**
1. Design and produce electrical schematic and wiring diagrams using CAD Basic and CAD Electrical.	1.1 Use the Basic drawing tools found under the AutoCAD Electrical Home tab. 1.2 Use the Electrical CAD drawing tools found under the AutoCAD Electrical Schematic tab. 1.3 Use and manipulate smart symbols from the CAD Electrical Icon Menu. 1.4 Add and cross-reference wire numbers in electrical drawings. 1.5 Work with Symbol Builder to create and alter smart symbols. 1.6 Insert and manipulate wires and ladders, using CAD Electrical. 1.7 Given specific parameters and direction, design circuits and produce ladder diagrams and wiring diagrams related to the projects in ELC 1125, using CAD Basic and CAD Electrical.
2. Design and produce a Basic AutoCAD drawing through Windows.	2.1 Create a drawing by opening up the necessary template. 2.2 Using the limit command set the limits, page size, units and scale.
3. Plan and edit drawings using tools found in AutoCAD electrical	3.1 Use the ribbon layer command to set the layer properties of the lines. 3.2 Use the edit erase command to erase unwanted parts of the drawing 3.3 Use the edit command to move, copy, mirror, trim, nudge, the drawing parts into position. 3.4 Choose the selected layer from the list of layers to edit the line type, style, color, line weight and the transparency of the drawing.
4. Select and draw various, features in the Ribbon Draw selection.	4.1 Choose the Home draw command to draw lines, rectangles, octagons, ellipses..

Learning Outcome	Objectives
	4.2 Using the home draw command add the required fillets and chamfers with the activation of the Explode command.
5. Create the necessary text on a drawing using the 2 styles of creating text	5.1 Using the Text ribbon command, set the text style, height, color, rotation, and location on the drawing. 5.2 Choose the text ribbon edit command to edit the text as required inserting the necessary symbols.
6. Create a hatch component using the ribbon hatch draw commands.	6.1 Use the selected ribbon hatch command to hatch the selected drawing feature.using either pattern, solid, gradient or user defined option. . 6.2 Using the selected ribbon hatch command set the required transparency, angle and scale property.
7. Create and utilize block commands.	7.1 Use the ribbon block insert command to insert a set block to location,scale,and rotation factor. 7.2 Choose the ribbon block command to create and save as new block. 7.3 Using the ribbon block edit command edit the insert blocks as required.
8. Print/Plot an assigned drawing using print plot settings saving it as the proper extension and in the appropriate location.	8.1 Use the print plot command to select the printer and its location. 8.2 Using the print plot command set the monochrome setting for line color to be black. 8.3 Use the print plot command to select the scale of the drawing to be printed using the selected view option. 8.4 Use the print plot command to select the transparency category if required. 8.5 Select the print plot command final step. Do a print view preview of the selected part to be printed/plotted, then print the drawing part.

Essential Employability Skills

Communication
- not applicable

Numeracy
- not applicable

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
- locate, select, organize, and document information using appropriate technology and info systems.
- analyze, evaluate, and apply relevant information from a variety of sources.

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.
- take responsibility for one's own actions, decisions, and consequences.

Delivery Method

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

Learning Activities

- Labs
- Self-Directed Learning
- In-Class Exercises
- Small Group Instruction
- One-to-One Instruction
- eLearning Components

Resources Required

Additional Supplies

USB Flashdrive
A minimum 4Gb flash drive. It is recommended to have two 4 GB drives so one can be used to back up data.

A windows PC capable of running AutoDesk Elect.
Specifications are available at this link: https://knowledge.autodesk.com/support/autocad-electrical/learn-explore/caas/sfdcarticles/sfdcarticles/System-requirements-for-AutoCAD-2020-including-Specialized-Toolsets.html

Evaluation Plan

Grading Scheme

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

Evaluation Method	Value (%)
Test/Exam	**30%**
Three equally weighted tests worth 10% each.	
Applied Activities (G)	**60%**
Assignments increase in value and complexity as the semester progresses. 2 assignments at 4% 3 assignments at 6%	

Evaluation Method	Value (%)
2 assignments at 7% 2 assignments at 10% Note that some assignments will be required to be completed in class. Drawings will be assessed according to rubrics/standards published in the Moodle shell. Please refer to the Moodle shell for additional information regarding drawing submission.	
Quizzes	**10%**
10 online quizzes each worth 1% Note that the tests are pulled from the same material as the quizzes. Failure to complete quizzes may impede success in tests as well	

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.