

COURSE NAME: ELE110 Residential Theory I

Credit Value: 3
Total Course Hours: 42
Prerequisite Course(s): None
Corequisite Course(s): None

COURSE DESCRIPTION

This course introduces students to residential electrical wiring. Students will learn proper terminology, basic principles and wiring practices, based on the Ontario Electrical Safety Code.

LAND ACKNOWLEDGEMENT

Canadore College resides on the traditional territory of the Anishinaabeg and within lands protected by the Robinson Huron Treaty of 1850. This land is occupied by the people of Nipissing First Nation since time immemorial.

PLAR INFORMATION

This course is eligible for Prior Learning Assessment and Recognition. Students are advised to discuss options with their program coordinator.

COURSE LEARNING OUTCOMES

Upon completion of this course, the student will have reliably demonstrated the ability to:

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| <p>1.0 Use the Ontario Electrical Safety Code (OESC) to interpret codes, regulations and standards.</p> <ul style="list-style-type: none">1.1 Describe the purpose of the OESC.1.2 Describe the general arrangement of OESC rules and regulations.1.3 Describe the administration of OESC rules and regulations.1.4 Describe OESC rules and regulations.1.5 Identify applicable codes and regulations. <p>2.0 Identify components of drawings and specifications.</p> <ul style="list-style-type: none">2.1 Identify and explain the application of the various common line types used in drawings.2.2 Read common scales.2.3 Explain why symbols and notations are used on electrical drawings.2.4 Identify symbols used on architectural, mechanical, and electrical drawings. <p>3.0 Determine the size and type of service, service components and service conductors according to calculated load, client and OESC requirements and site-specific conditions.</p> <ul style="list-style-type: none">3.1 Calculate the load for a single-phase service. | <ul style="list-style-type: none">3.2 Calculate the size of service equipment for single dwelling units.3.3 Determine layout and location of service components according to AHJ and OESC clearance and height requirements to provide access for branch circuit installation and components.3.4 Determine trench size and minimum cover requirements for direct burial cables and underground raceways according to the AHJ and OESC requirements.3.5 Determine overhead clearance according to AHJ and OESC requirements for the usage of the area and proximity to structures. <p>4.0 Describe the components, installation methods and proper grounding of overhead and underground consumer's services to a single dwelling.</p> <ul style="list-style-type: none">4.1 Interpret codes and regulations pertaining to single-phase services.4.2 Interpret information pertaining to single-phase services found on drawings and specifications.4.3 Identify types of single-phase services and |
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- describe their characteristics and applications.
- 4.4 Identify service components, service conductors and fasteners, describe their purpose and applications.
- 4.5 Identify the considerations and requirements for selecting the type of single-phase services, service components and service conductors.
- 4.6 Identify sources of information and documentation required for the installation of single-phase services.
- 4.7 Identify and describe the methods used to install single-phase services, service components and service conductors.
- 4.8 Identify the methods of grounding and bonding single-phase services.
- 5.0 Outline the code requirements for installation of electrical outlets and devices used in a residential dwelling.
- 5.1 Identify and explain the electrical outlet symbols used in the plans of a residential dwelling.
- 5.2 Discuss the types of outlets, devices and boxes used in a residential dwelling.
- 5.3 Determine the number of insulated conductors permitted in a given size box.
- 6.0 Determine the number and location of lighting and receptacle branch circuits in a residential dwelling according to the OESC and Ontario Building Code (OBC).
- 6.1 Determine the number and location of lighting outlets in a residential dwelling.
- 6.2 Determine the minimum number of and location of receptacles required in a residential dwelling.
- 7.0 Determine the code requirements for different wiring methods in a residential dwelling.
- 7.1 Describe the types of cables used in a residential dwelling.
- 7.2 List the installation requirements for each type of cable.
- 8.0 Identify conductor and terminating methods for outlets and devices.
- 8.1 Identify the grounded and ungrounded conductors in cable or conduit.
- 8.2 Select a switch with the proper rating for the specific installation conditions.
- 8.3 Identify the markings found on the terminals of wiring devices and wire connectors.
- 8.4 Layout the wiring connections for various switch and lighting circuits according to the OESC.

GENERAL EDUCATION

This is not a General Education course.

PROGRAM OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved program learning outcomes (PLO):

Electrical Techniques

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.
8. use computer skills and tools to solve basic electrical related problems.
10. assist in the preparation and maintenance of records and documentation systems.
15. identify problems and troubleshoot electrical systems under the supervision of a qualified person.

ESSENTIAL EMPLOYABILITY SKILLS OUTCOMES

This course contributes to the following Ministry of Colleges and Universities approved essential employability skills (EES) outcomes:

1. Communicate clearly, concisely, and correctly in the written, spoken, and visual form that fulfils the purpose and meets the needs of the audience.
2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
3. Execute mathematical operations accurately.
4. Apply a systematic approach to solve problems.
5. Use a variety of thinking skills to anticipate and solve problems.
6. Locate, select, organize, and document information using appropriate technology and information systems.
7. Analyse, evaluate, and apply relevant information from a variety of sources.
8. Show respect for the diverse opinions, values, belief systems, and contributions of others.
9. Interact with others in groups or teams in ways that contribute to effective working relationships and the achievement of goals.
10. Manage the use of time and other resources to complete projects.
11. Take responsibility for one's own actions, decisions, and consequences.

EXTERNAL COURSE ACCREDITATIONS AND CONDITIONS

Successful completion of the Electrical Techniques Program Certificate is equivalent to the Apprenticeship Curriculum Standard Electrician Level 1: Construction & Maintenance 309A, Domestic & Rural 309C, Industrial 442A

COURSE EVALUATION

Evaluation Item	Weight
Assignments	70%
Tests	30%

COURSE PASS GRADE

50

GRADING SYSTEM

A+:	90-100%	B+:	77-79%	C+:	65-69%	D:	50-54%	S - Satisfactory
A:	85-89%	B:	73-76%	C:	60-64%	F:	0-49%	I - Incomplete
A-:	80-84%	B-:	70-72%	D+:	55-59%			F- Repeat Course, included in GPA
								FS- Failure Supplemental
								FR- Repeat course, excluded from GPA

*For a complete chart of grades and descriptions, please see the Grading Policy.

LEARNING RESOURCES

Course Textbooks:

Required:

Title: Electrical Wiring Residential Canadian Edition
Author: Mullin/Branch/Gerolimom/Trineer/Granelli/Simmons
Publisher:
Edition: 10th
Print ISBN: 9781778412868
eBook ISBN: 9781778414299

Title: Ontario Electrical Safety Code (2021)
Author: CSA Group
Publisher:
Edition: 28th
Print ISBN:
eBook ISBN:

Access to:

Stable and consistent Internet service

Mobile computing device with the ability to install and run the latest: Internet browser (e.g.: Edge, Chrome, or Firefox); ilearn (Canadore's learning management system - D2L/Brightspace), Office 365 (desktop version); and remote learning software (e.g.: Microsoft Teams, Zoom and Echo360)

Mobile computing device speaker and microphone, or headphones with microphone

Mobile computing device camera, or web cam

Resources listed on the course outline support the achievement of learning outcomes, and may be used throughout the course to varying degrees depending on the instructor's teaching methodology and the nature of the resource.

Technology requirements - <https://www.canadorecollege.ca/BYOD>

The Harris Learning Library's staff can help you find resources to support your learning - www.eclibrary.ca

LEARNING ACTIVITIES

Lectures, Readings, Power point presentations, Videos, and Self assessments

DELIVERY MODE

This course may be delivered, in whole or in part, in a number of modalities, including In-Person, Remote (synchronous and/or asynchronous), hybrid, or Hyflex, as per accreditation and/or regulatory standards where appropriate. This information is identified on the course schedule (student and faculty).

RECORDING GUIDELINES

This class may be recorded by faculty of the College. Faculty will inform students when recording of the class commences and ceases. 'Recorded' means that the audio-visual and chat portions of the class will be recorded and then be stored on the College or vendor provider server. They will be made available to students, but only for the express and sole use of those registered in this course. If you have any questions or concerns about this recording, please contact your instructor or the College's privacy officer at privacy.officer@canadorecollege.ca. Full recording guidelines can be found at: <https://cdn.agilitycms.com/canadore-college/academic-centre-of-excellence/Canadore%20Recording%20Guidelines.pdf>

ACADEMIC POLICIES

Canadore College is committed to the highest standards of academic integrity, and expects students to adhere to these standards as part of the learning process in all environments. The College's Academic Integrity policy seeks to ensure that all students understand their rights and responsibilities in upholding academic integrity and that students receive an accurate and fair assessment of their work. Please review the Academic Integrity policy (A-18) and other academic policies found on our website: <https://www.canadorecollege.ca/about/policies>.

COLLEGE POLICIES

- Protecting human rights in support of a respectful college community

For college policies please see: <http://www.canadorecollege.ca/about-us/college-policies>.

Accessibility Learning Services for Students with Disabilities - Student Success Services

Student Success Services provides comprehensive support to students. We aim to ensure that all students have equal access to educational opportunities and can succeed in their academic journey. Our services focus on reducing and eliminating barriers related to education through individualized accommodations and support. If you are a student with a disability, we encourage you to register with Accessible Learning by completing the Student Success – Accessible Learning Services Form (https://canadorecollege-accommodate.symphlicity.com/public_accommodation/).

For more detailed information about the services offered, please visit our webpage: Student Success Services - (<https://www.canadorecollege.ca/support/student-success-services>). To connect with Student Success Services email studentsuccessnow@canadorecollege.ca or call 705.474.7600 ext 5205.

FIRST PEOPLES' CENTRE:

A culturally safe environment offering CONFIDENTIAL student focused services, drop in or make an appointment to access:

- One on one counselling
- Elder in residence program
- Peer tutoring
- Peer mentorship
- Lunch & learn workshops on study skills, self-care, life skills
- Learning Resource Centre

Drop by our offices at C254 College Drive, W103 Commerce Court or call 705 474 7600 Ext. 5961 College Drive / 5647 Commerce Court.

<https://www.canadorecollege.ca/experience/indigenous-student-experience>

WAIVER OF RESPONSIBILITY

Every attempt is made to ensure the accuracy of this information as of the date of publication. The college reserves the right to modify, change, add, or delete content.

HISTORICAL COURSE OUTLINES

Students use course outlines to support their learning. Students are responsible for retaining course outlines for future use in applications for transfer of credit to other educational institutions.