



## Electrician Common Core Level 3 – ECC3 Trades Training

### Program Outline

PROGRAM IMPLEMENTATION DATE: March 2005  
OUTLINE EFFECTIVE DATE: March 2021  
PROGRAM OUTLINE REVIEW DATE: September 2026

---

#### GENERAL PROGRAM DESCRIPTION:

This 10-week Electrician Common Core Level 3 program delivers the skills, knowledge and training required for the 4-level Construction Electrician apprenticeship program or the Industrial Electrician apprenticeship program. Program competencies include analyzing three-phase circuits and electronic circuits, installing and maintaining consumer/supply services and metering equipment, installing and maintaining low voltage distribution systems, bonding, grounding and ground fault detection systems, power generation systems, installing and maintaining low voltage and high voltage transformers, motor starters and controls, drives and AC and DC motors. This program includes classroom theory, demonstrations and practical hands-on training in a state-of-the-art electrical concepts lab as well as in the electrician shop. Safe work habits are important in this trade and are emphasized, reinforced and practiced throughout the program.

---

**Credentials Granted:** Upon successful completion of the 10-week Level 3 Electrician Common Core program, students receive:

- Level 3 technical training credit for the Construction Electrician or Industrial Electrician Apprentice program.

---

**Delivery:** This program is delivered face to face as a block intake.

**Time for this program:** 10 weeks

#### Typical Structure of Instructional Hours:

Instructional Activity	Duration
Theory based training (approximately per day)	90%
Practical shop floor training (approximately per day)	10%
Trades Contact Hours	28 hrs/wk

#### Practicum Hours (if applicable):

Type of Practicum	Duration
On-the-job Experience	N/A
Formal Work Experience	N/A
Other	N/A
<b>Total</b>	

**Program Outline Author or Contact:**

Dave Murdoch, CE–RSE, IE–RSE, IE Registered Assessor, FSR, BA

\_\_\_\_\_  
Signature

---

**APPROVAL SIGNATURES:**

Department Head  
Joy Brown  
E-mail: [jbrown3@cotr.bc.ca](mailto:jbrown3@cotr.bc.ca)

Dean of Trades and Technology  
Dr. Jack Moes  
E-mail: [jmoes@cotr.bc.ca](mailto:jmoes@cotr.bc.ca)

\_\_\_\_\_  
Department Head Signature

\_\_\_\_\_  
Dean Signature

EDCO

Valid from: March 2021 – September 2026

\_\_\_\_\_  
Education Council Approval Date

---

**PROGRAM PREREQUISITES AND TRANSFER CREDIT:**

**Prerequisites:** Sponsored Electrician apprentice that has successfully completed Level 2 Electrician Common Core technical training.

**Flexible Assessment (FA):**

Credit can be awarded for this program through FA

Yes  No

**Prior Learning Credit:**

Apprentices that have extensive work experience in a trade (in BC or elsewhere) but have never been certified must apply through the Industry Training Authority (ITA) to challenge the certification for advanced placement in a program. Refer to the ITA website (<http://www.itabc.ca/apply-apprenticeship/challenging-exams>) for details regarding the challenge procedure. Trade specific requirements can be found for each trade in the Trades Program Profiles on the ITA website.

**Prior Program Number:** N/A

## Textbooks and Required Resources:

Textbook selection varies by instructor and may change from year to year. At the Program Outline Effective Date the following textbooks were in use (most current edition):

Complete Modules Level 3  
Canadian Electrical Code; BC Amendments, BC Bulletins, Others as requested (available through BCSA)  
BCIT Workbook

### Recommended:

Delmar's *Direct Current Fundamentals and Alternating Current Fundamentals*, 8<sup>th</sup> Ed.  
*Electrical Wiring: Industrial*  
Delmar's *Standard Textbook of Electricity*, 3<sup>rd</sup> Ed. (Supplemental)  
*Electronics for Electricians*, 6<sup>th</sup> Ed.

Please see the instructor's syllabus or check COTR's online text calculator  
<http://go.cotr.bc.ca/tuition/tCalc.asp> for a complete list of the currently required textbooks.

---

## PROGRAM DESIGN:

Apprenticeship programs cover the general area competencies (GAC) for the program as sourced from curriculum documents provided by Industry Training Authority (ITA). The Technical Training Topics are listed under the Technical Training Content section of this document, and related competencies are listed under the Program Competencies section. College of the Rockies is accredited by ITA to deliver apprenticeship programs.

---

## TECHNICAL TRAINING CONTENT:

- ELEA 301     Apply Circuit Concepts**
- Analyze Three-phase AC Circuits
  - Analyze Electronic Circuits
- ELEA 302     Use Tools and Equipment**
- Use Measuring and Testing Equipment
- ELEA 303     Organize Work**
- Interpret Plans, Drawings and Specifications
- ELEA 304     Install and Maintain Consumer/Supply Services and Metering Equipment**
- Install Three-phase Consumer/Supply Services and Metering Equipment
  - Maintain Three-phase Services and Metering Equipment
- ELEA 305     Install and Maintain Low Voltage Distribution Systems**
- Install Low Voltage Distribution Equipment
- ELEA 306     Install and Maintain Bonding, Grounding and Ground Fault Detection Systems**
- Install Grounding and Bonding Systems
  - Install Ground Fault Detection Systems

**ELEA 307     Install and Maintain Power Generation Systems**

- Install AC Generating Systems
- Maintain AC Generating Systems
- Install DC Generating Systems
- Maintain DC Generating Systems

**ELEA 308     Install and Maintain Transformers**

- Install Low Voltage Three-Phase Transformers
- Install High Voltage Transformers

**ELEA 309     Install and Maintain Branch Circuitry**

- Install Wiring Devices

**ELEA 310     Install and Maintain Motor Starters and Controls**

- Install Motor Starters and Controls
- Maintain Motor Starters and Controls

**ELEA 311     Install and Maintain Drives**

- Install Drives

**ELEA 312     Install and Maintain Motors**

- Install AC Motors
- Maintain AC Motors
- Install DC Motors
- Maintain DC Motors

---

**PROGRAM COMPETENCIES:**

Upon the successful completion of this program, students will be able to

- analyze three-phase AC circuits and electronic circuits
- use measuring and testing equipment
- interpret plans, drawings and specifications
- install and maintain three-phase consumer/supply services and metering equipment
- install and maintain low voltage distribution systems
- install and maintain bonding, grounding, and fault detection systems
- install and maintain AC and DC generating systems
- install and maintain low voltage three-phase transformers and high voltage transformers
- install wiring devices
- install and maintain motor starters and controls
- install and maintain drives
- install and maintain AC and DC motors

*The program competencies covered in this program follow Industry Training Authority harmonized curriculum.*

---

## EVALUATION AND ASSESSMENT:

Assignments	% Of Total Grade
Theory	90%
Practical	<u>10%</u>
Total	100%

When the apprentice completes the program, the instructor will report evaluation results to the Industry Training Authority.

Students must obtain a mark of 70% overall to pass the program.

Students are continually evaluated on practical work in the shop and may request information or update of their performance at any time throughout the length of the program.

<b>ELECTRICIAN COMMON CORE LEVEL 3</b>			
COTR COURSE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
ELEA 301	Apply Circuit Concepts	33%	20%
ELEA 302	Use Tools and Equipment	2%	0%
ELEA 303	Organize Work	4%	0%
ELEA 304	Install and Maintain Consumer/Supply Services and Metering Equipment	4%	0%
ELEA 305	Install and Maintain Low Voltage Distribution Systems	4%	0%
ELEA 306	Install and Maintain Bonding, Grounding and Ground Fault Detection Systems	2%	0%
ELEA 307	Install and Maintain Power Generation Systems	10%	10%
ELEA 308	Install and Maintain Transformers	11%	25%
ELEA 309	Install and Maintain Branch Circuitry	1%	0%
ELEA 310	Install and Maintain Motor Starters and Controls	7%	20%
ELEA 311	Install and Maintain Drives	5%	0%
ELEA 312	Install and Maintain Motors	17%	25%
	<b>Total</b>	<b>100%</b>	<b>100%</b>
<b>In-school theory &amp; practical subject competency weighting</b>		90%	10%
<b>Final in-school percentage score</b>		<b>IN-SCHOOL %</b>	
<b>In-School Percentage Score</b> Combined theory and practical subject competency multiplied by		80%	
<b>Standardized Level Exam Percentage Score</b> The exam score is multiplied by		20%	
<b>Final Percentage Score</b>		<b>FINAL%</b>	

## STUDENT RESPONSIBILITY:

Students are expected to follow all College Policies and Practices as outlined in the program handout package. Mastery of trade specific techniques and methods necessary to a given trade requires significant supervised practice. As a result, regular attendance is necessary for success in this program. Students are expected to follow Policy 2.6.2 – "***Vocational Student Withdrawals as a Result of Absence***".

WorkSafeBC regulations apply to all trades programs. Students are expected to follow all safe work practices and have high regard for the safety of others as well as of themselves. Students are responsible to wear personal protective equipment (PPE) as directed. At a minimum, students must provide and wear approved safety footwear and eyewear at all times in the shop. Additional PPE may be required for specific tasks. Students are expected to wear clothing suitable for working safely in the shop.

The shop attendant is also the first aid attendant for the building. Students may only work in the shop during assigned times. If an incident occurs, no matter how minor, it must be reported to the shop attendant immediately.

---

## INDUSTRY SITE VISITS:

There may be off-site field trips organized in the program as opportunity or resources are available during this program. Students **ARE REQUIRED** to arrange their own transportation for such field trips. Students are expected to follow all college policies and procedures when participating in off-campus activities.

---

## STUDENTS MUST PROVIDE THEIR OWN:

- linesman pliers
  - diagonal cutters
  - hacksaw
  - wire strippers
  - Phillips screwdriver
  - slotted screwdriver
  - Robertson screwdriver
  - torpedo level
  - knife
  - tape measure
  - channel lock pliers
  - 6" crescent wrench
  - personal digital multimeter minimum 10mΩ/v
-

**EXAM POLICY:**

Students must attend all required scheduled tests and exams that make up a final grade at the appointed time and place.

Individual instructors may accommodate for illness or personal crisis. Additional accommodation will not be made unless a written request is sent to and approved by the appropriate Department Head prior to the scheduled exam.

Any student who misses a scheduled test or exam without approval will be given a grade of "0" for the exam.

---

**PROGRAM GRADE:**

Program grades are assigned as follows:

<b>COM</b>	Completed to defined standard $\geq$ 70%
<b>NCG</b>	No Credit Granted < 70%

Successful completion of the in-school training is defined as a final score of 70% or greater. (ITA website)

---

**ACADEMIC POLICIES:**

See [www.cotr.bc.ca/policies](http://www.cotr.bc.ca/policies) for general college policies related to program activities, including grade appeals, cheating and plagiarism.

---

**PROGRAM CHANGES:**

Information contained in program outlines is correct at the time of publication. Content of the programs is revised on an ongoing basis to ensure relevance to changing educational, employment and marketing needs. The instructor will endeavour to provide notice of changes to students as soon as possible. The instructor reserves the right to add material from programs.