ELECF – Electrician Foundation

Trades

Effective Term & Year: Fall 2022
Program Outline Review Date: 2026-01-01

Program Area: Trades Foundation Training

Description:

This comprehensive 24-week Electrician Foundation (pre-apprenticeship) program provides students with the knowledge and skills needed to enter the electrical trade and covers the program competencies for Level 1 Common Core of the four-level Electrician Apprenticeship program. Learning outcomes covered include applying circuit concepts, interpreting plans, drawings and specifications, using the Canadian Electrical Code, and installing and maintaining single-phase metering equipment, protective devices, low voltage distribution systems, grounding and bonding systems, cables and enclosures, branch circuitry systems and communication systems. The program includes classroom theory and practical hands-on experience in a state -of -the -art electrical concepts lab and experiential learning space in our shop setting. Safe work habits are emphasized, reinforced and practiced throughout the program.

Credentials Granted:

- Level 1 Technical Training credit of the 4 Level Construction Electrician or Industrial Electrician Apprenticeship program from the Industry Training Authority
- Certificate of Completion from the Industry Training Authority
- College of the Rockies Certificate
- Credit for 350 Work-based Training hours from the Industry Training Authority

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Delivery Methods: Hybrid (Face-to-Face and Online)

Program Duration: 24 weeks

Instructional Activity and Hours:

Activity	Hours
Instructional Hours (hrs/wk)	28 hrs/wk
Directed Studies (hrs/wk)	2 hrs/wk
Total (hrs/wk)	30 hrs/wk
Total Program Hours	720

Content Weighting:

Activity	Percentage
Theory	70%
Practical Skills	30%

Admission Requirements:

Secondary school graduation or equivalent or completion of a College of the Rockies assessment to acceptable level.

Highly Recommended Admission Prerequisites:

The following education is **highly** recommended for student success within the program:

- Recent secondary school graduate (within the past 5 years)
- Foundations of Mathematics and Pre-Calculus 10. Either Pre-Calculus 11, Foundations of Mathematics 11, Foundations of Mathematics 12, Pre-Calculus 12, Calculus 12, Geometry 12, or equivalent; or for those who completed math in BC before 2018 curriculum change, either Principles of Math 11, Principles of Math 12, Pre-Calculus 11, Pre-Calculus 12, or equivalent

Flexible Assessment:

Credit can be awarded for this program through Flexible Assessment.

Program Transfer Credit:

For information about block transfer agreements between programs in British Columbia, Alberta, and elsewhere, please visit http://www.cotr.bc.ca/transfer.

To minimize transfer issues, check with an academic advisor at the institution that will receive the transfer credits.

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):

Required:

BC Electrical CE/IE Level 1 Volumes 1&2

Canadian Electrical Code, Part 1 (Current Edition)

BC Electrical Amendments including: Directives, Information Bulletins & Safety Orders

(Printable through Technical Safety BC: https://technicalsafetybc.ca/electrical/electrical-regulations)

BCIT Electrical Apprentice Year 1 Exercise Booklet

Recommended (Optional Texts):

Direct Current Fundamentals (Herman)

Electrical Wiring: Residential (Canadian Edition to match the current Canadian Electrical Code)

Alternating Current Fundamentals (Herman)

Electric Motor Control (Herman)

Delmar's Standard Textbook of Electricity (Herman) (Supplemental Text)

Please see the instructor's syllabus or check COTR's online text calculator https://textbook.cotr.bc.ca/ for a complete list of the currently required textbooks.

Program Competencies and Technical Training Content:

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

ELEC 101 Apply Circuit Concepts

- Use electrical circuit concepts
- Analyze DC Circuits
- Analyze principles of electromagnetism
- Analyze electronic circuits

ELEC 102 Perform Safety Related Functions

- Use personal protective equipment (PPE) and safety equipment
- Maintain safe work environment
- Perform lock-out and tag-out procedures

ELEC 103 Use Tools and Equipment

- Use measuring and testing equipment

ELEC 104 Organize Work

- Interpret plans, drawings and specifications
- Use Canadian Electrical Code (CEC)

ELEC 105 Use Communication and Mentoring Techniques

- Use mentoring techniques

ELEC 106 Install and Maintain Consumer/Supply Services and Metering Equipment

- Install single-phase consumer/supply services and metering equipment
- Maintain single-phase services and metering equipment

ELEC 107 Install and Maintain Protection Devices

- Install ground fault, arc fault, and surge protection devices

ELEC 108 Install and Maintain Low Voltage Distribution Systems

- Install low voltage distribution equipment

ELEC 109 Install and Maintain Bonding, Grounding and Ground Fault Detection Systems

- Install grounding and bonding systems

ELEC 110 Install and Maintain Raceways, Cables and Enclosures

- Install conductors and cables
- Install raceways, boxes and fittings

ELEC 111 Install and Maintain Branch Circuitry

- Install luminaires
- Install wiring devices
- Install lighting controls
- Install lighting standards

ELEC 112 Install and Maintain Motor Starters and Controls

- Install motor starters and controls
- Maintain motor starts and controls

ELEC 113 Install and Maintain Communication Systems

- Install voice/data/video (VDV) systems

Evaluation and Assessment:

ELECTRICIAN FOUNDATION

COTR COURSE	SUBJECT COMPETENCIES	THEORY WEIGHTING	PRACTICAL WEIGHTING
ELEC 101	Apply Circuit Concepts	50%	40%
ELEC 102	Perform Safety Related Functions	3%	10%
ELEC 103	Use Tools and Equipment	2%	10%
ELEC 104	Organize Work	3%	0%
ELEC 105	Use Communication and Mentoring Techniques	0%	0%
ELEC 106	Install and Maintain Consumer/Supply Services and Metering Equipment	5%	0%
ELEC 107	Install and Maintain Protection Devices	4%	0%
ELEC 108	Install and Maintain Low Voltage Distribution Systems	5%	0%
ELEC 109	Install and Maintain Bonding, Grounding and Ground Fault Detection Systems	4%	0%
ELEC 110	Install and Maintain Raceways, Cables and Enclosures	8%	0%
ELEC 111	Install and Maintain Branch Circuitry	6%	15%
ELEC 112	Install and Maintain Motor Starters and Controls	8%	10%
ELEC 113	Install and Maintain Communication Systems	2%	15
	Total	**100%**	**100%**
In-School Theory/Practical Subject Competency Weighting		70%	30%
Final in-school percentage score Students must achieve a minimum 70% overall as the final in-school percentage score		**IN-SCHOOL %**	

In-school percentage score Combined theory and practical subject competency	80%
Final Exam	20%
Final percentage score	FINAL%

Pass Requirements:

- **In order to pass this program, students are required to**
  - achieve a minimum overall 70% final percentage score
  - pass all Workplace Health and Safety courses within the program

Students must provide their own:

- Safety glasses
- Steel-toed leather work boots
- Close fitting work gloves
- Computer and printer
- Reference manuals
- Pens, pencils, coloured pencils (erasable preferred), ruler
- Three ring binder with lined, unlined and graph paper
- *Optional* electrician hand tools as listed in Electrical Entry-Level Tool List
- Non-programmable scientific calculator (instructors and SkilledTradesBC use a Sharp EL-520X xxx)

Workplace Health and Safety Courses:

Workplace Hazardous Material Information System (WHMIS: PVHE-700)

Basic First Aid – (PVHE-100)

Workplace Health and Safety Courses Grade Scheme:

COM	NCG
Completed to the minimum defined standard	No credit granted – less than minimum defined standard

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Academic Policies:

College of the Rockies policies related to courses can be found at https://cotr.bc.ca/about-us/college-policies/ and include the following:

- Policy 2.4.3 Students with Documented Disabilities
- Policy 2.4.4 Student Conduct (plagiarism, other cheating, behavioral misconduct)

- Policy 2.4.8 Academic Performance
- Policy 2.5.3 Grade Appeal
- Policy 2.4.9 Student Concerns Re Faculty

Program Grade

COM	NCG
Completed to the defined standard – 70% or greater	No Credit Granted – less than 70%

Program Changes:

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

Industry Training:

The program competencies and technical training content delivered in this program follow the SkilledTradesBC Program Outline for this trade.

Safety Catalog:

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.