



ELEI4 – Industrial Electrician Apprenticeship Level 4

Trades

Effective Term & Year: Fall 2022

Program Outline Review Date: 2026-09-01

Program Area: Trades Apprenticeship Training

Description:

This Industrial Electrician program delivers the Level 4 technical training competencies required in the British Columbia Industrial Electrician apprenticeship trade. Training topics covered in this program include installing and maintaining under and over voltage protection devices, power conditioning, UPS and surge suppression systems, renewable energy generating and storage systems, high voltage systems, non-rotating equipment and associated controls, fire alarm systems, security and surveillance systems, and voice/data/video (VDV) systems. In addition, apprentices install, program and maintain building automation systems, automated control systems, pneumatic and hydraulic control systems as well as pumping systems.

Credentials Granted:

Upon successful completion of the 10-week level 4 Industrial Electrician Apprenticeship program, students will receive:

- Level 4 technical training credit for Industrial Electrician Apprenticeship program

Delivery Methods: Face-to-Face, Online

Program Duration: 10 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	300 Hours

Content Weighting:

Activity	Percentage
Classroom, Directed Studies or Online Instruction	90%
Seminar/Tutorials	10%

Admission Requirements:

Sponsored Industrial Electrician Apprentice who has successfully completed Levels 1, 2 and 3 Electrician Common Core technical training.

Flexible Assessment:

Credit cannot 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):

Industrial Electrician ? Level 4 Module Pkg

Canadian Electrical Code ? Part 1 (2012) (22nd Edition)

Electric Motor Control (Alerich, 9th Edition)

Direct Current Fundamentals (Herman, 8th Edition)

Electrical Wiring – Residential (Mullin, 6th Cdn)

Alternating Current Fundamentals (Herman, 8th Edition)

Electrical Wiring – Commercial (Mullin, 5th Cdn)

Electrical Wiring – Industrial (Smith, 3rd Cdn)

Delmar's Standard Textbook of Electricity (Herman, 5th Edition)

Program Competencies and Technical Training Content:

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

IELEC 401 Organize Work

- Interpret plans, drawings and specifications
- Identify hazardous locations

IELEC 402 Install and Maintain Protection Devices

- Install under and over voltage protection devices

IELEC 403 Install and Maintain Power Conditioning, Uninterruptible Power Supply (UPS) and Surge Suppression Systems

- Install power conditioning, UPS and surge suppression systems
- Maintain power conditioning, UPS and surge suppression systems

IELEC 404 Install and Maintain Renewable Energy Generating and Storage Systems

- Install renewable energy generating and storage systems

IELEC 405 Install and Maintain High Voltage Systems

- Install high voltage systems
- Maintain high voltage systems

IELEC 406 Install and Maintain Non-Rotating Equipment and Associated Controls

- Install non-rotating equipment and associated controls
- Maintain non-rotating equipment and associated controls

IELEC 407 Install and Maintain Signaling Systems

- Install fire alarm systems
- Install security and surveillance systems

IELEC 408 Install and Maintain Communication Systems

- Install voice/data/video (VDV) systems

IELEC 409 Install and Maintain Building Automation Systems

- Install building automation systems

IELEC 410 Install, Program and Maintain Automated Control Systems

- Install automated control systems
- Program automated control systems
- Optimize system performance

IELEC 411 Install and Maintain Pneumatic, Hydraulic Control and Pumping Systems

- Install pneumatic control systems
- Install hydraulic control systems
- Install and maintain pumping systems

Evaluation and Assessment:

INDUSTRIAL ELECTRICIAN APPRENTICESHIP LEVEL 4

COTR COURSE SUBJECT COMPETENCIES		THEORY WEIGHTING	PRACTICAL WEIGHTING
IELEC 401	Organize Work	7%	0%
IELEC 402	Install and Maintain Protection Devices	4%	0%
IELEC 403	Install and Maintain Power Conditioning, Uninterruptible Power Supply (UPS) and Surge Suppression Systems	4%	0%
IELEC 404	Install and Maintain Renewable Energy Generating and Storage Systems	6%	0%
IELEC 405	Install and Maintain High Voltage Systems	5%	0%
IELEC 406	Install and Maintain Non-Rotating Equipment and Associated Controls	5%	0%
IELEC 407	Install and Maintain Signaling Systems	6%	20%
IELEC 408	Install and Maintain Communication Systems	6%	30%
IELEC 409	Install and Maintain Building Automation Systems	7%	0%
IELEC 410	Install, Program and Maintain Automation Systems	45%	50%
IELEC 411	Install and Maintain Pneumatic, Hydraulic Control and Pumping Systems	5%	0%
Total		100%	100%

In-school theory / practical subject competency weighting	90%	10%
Final in-school percentage score	IN-SCHOOL %	
In-school Percentage Score	Combined theory and practical subject competency multiplied 70% by	
Proprietary Level 4 Exam Percentage Score	30%	
The exam score is multiplied by		
Final Percentage Score	FINAL	

Pass Requirements:

All apprentices who complete Level 4 of the Industrial Electrician program with a FINAL level percentage score of 70% or greater will write the Interprovincial Red Seal examination as their final assessment.

Students must provide their own:

- linesman pliers
- diagonal cutters
- hacksaw
- wire strippers
- Phillips screwdriver
- torpedo level
- knife
- tape measure
- channel lock pliers
- 6" crescent wrench
- Personal digital multimeter minimum 10m?/v

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 2.5.8 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.

Course Descriptions: Refer to Course Outlines – <https://outlines.cotr.bc.ca/course/>