



## PROGRAM OVERVIEW

This program meets the in-school training requirements of the Industrial Electrician Apprenticeship program administered by the Ministry of Training, Colleges and Universities.

Students gain theoretical and practical training to complement on-the-job learning.

The training consists of a basic course of eight weeks duration and an intermediate and advanced course of ten weeks each.

## CAREER PATHS

Apprentices in the Industrial Electrician trade plan, assemble, install, repair, and maintain electrical equipment in industrial installations.

## PROGRAM OF STUDY

### Basic (6540)

ELR620 - 8 Electrical Theory - Level 1  
ELR621 - 5 Electronics - Level 1  
ELR622 - 3 Instrumentation - Level 1  
ELR623 - 4 Canadian Electrical Code - Level 1  
ELR624 - 6 Installation Methods - Level 1  
ELR625 - 4 Prints - Level 1

### Intermediate (6541)

ELR720 - 8 Electrical Theory - Level 2  
ELR721 - 4 Electronics - Level 2  
ELR722 - 4 Instrumentation - Level 2  
ELR723 - 4 Canadian Electrical Code - Level 2  
ELR724 - 4 Installation Methods - Level 2  
ELR725 - 3 Prints - Level 2  
ELR726 - 3 Monitoring & Communication Systems

### Advanced (6542)

ELR820 - 6 Electrical Theory - Level 3  
ELR821 - 6 Electronics - Level 3  
ELR822 - 4 Instrumentation - Level 3  
ELR823 - 3 Canadian Electrical Code - Level 3

ELR824 - 8 Installation Methods - Level 3  
ELR826 - 3 Fluid Power

## Course Descriptions

### Basic (6540)

#### **Electrical Theory - Level 1** (ELR620) (8 credits)

This course introduces the student to basic DC electrical theory. OHM's Law, series, parallel, series/ parallel circuits are studied. Magnetic theory is also covered.

#### **Electronics - Level 1** (ELR621) (5 credits)

This course introduces the student to semiconductors and their applications. Simple digital logic devices and circuits are also covered.

#### **Instrumentation - Level 1** (ELR622) (3 credits)

This course is an introduction to instrumentation symbols and terminology. Temperature and pressure measurement will be studied in detail.

#### **Canadian Electrical Code - Level 1** (ELR623) (4 credits)

This course introduces the student to the Canadian Electrical Code with a focus on the general sections of the code and residential wiring practices.

#### **Installation Methods - Level 1** (ELR624) (6 credits)

This is a hands-on course focusing primarily on residential wiring practices. Installation methods applying to common electrical cables and conduits are also covered.

#### **Prints - Level 1** (ELR625) (4 credits)

This course introduces the student to print reading and interpreting specifications for residential (single-dwelling) construction projects. The student will obtain information from architectural, mechanical and electrical drawings and identify related building and electrical codes.

### Intermediate (6541)

#### **Electrical Theory - Level 2** (ELR720) (8 credits)

This course covers magnetism, direct current machines, alternating current circuit theory and single phase transformers.

#### **Electronics - Level 2** (ELR721) (4 credits)

This course introduces the student to rectifier based power supplies, thyristors and field effect transistors. Operational amplifiers and their applications are also covered. Theory is supported by appropriate labs.

#### **Instrumentation - Level 2** (ELR722) (4 credits)

This course will introduce the student to instrumentation theory relating to the measurement of pressure and flow in industrial processes. The theory is supported by appropriate labs.

#### **Canadian Electrical Code - Level 2** (ELR723) (4 credits)

This course primarily covers sections of the Canadian Electrical Code dealing with commercial wiring practices. It is a continuation of Canadian Electrical Code - Level 1.

#### **Installation Methods - Level 2** (ELR724) (4 credits)

This lab oriented course will cover basic connection and control of alternating current and direct current motors.

**Prints - Level 2 (ELR725) (3 credits)**

This course covers interpretation of construction drawings and specifications relating to commercial construction projects. It focuses on electrical installation.

**Monitoring & Communication Systems (ELR726) (3 credits)**

This course introduces the student to monitoring and communication systems, such as fire alarm systems, nurse call systems and paging systems. Related codes and standards are also covered. Theory is supported by appropriate labs.

**Advanced (6542)****Electrical Theory - Level 3 (ELR820) (6 credits)**

This course covers three phase alternating current circuit theory, poly-phase transformers and alternating current motors and generators.

**Electronics - Level 3 (ELR821) (6 credits)**

This course introduces the student to solid state motor drives for controlling alternating and direct current motors. Theory is supported by appropriate labs.

**Instrumentation - Level 3 (ELR822) (4 credits)**

This course will introduce the student to instrumentation theory relating to pneumatic systems. This is followed by control system theory and the principles of proportional, integral and derivative control. The theory is supported by appropriate labs.

**Canadian Electrical Code - Level 3 (ELR823) (3 credits)**

This course primarily covers sections of the Canadian Electrical Code dealing with industrial wiring practices. It is a continuation of Canadian Electrical Code - Level 2.

**Installation Methods - Level 3 (ELR824) (8 credits)**

This lab oriented course will cover connection and testing of transformers, wound rotor induction motors, synchronous motors and two speed squirrel cage motors. Installation and programming of programmable logic controllers is also covered.

**Fluid Power (ELR826) (3 credits)**

This course introduces the student to the basic principles of fluid mechanics and hydraulic systems. Data collection by chart recorders and installation of smart transmitters and microprocessor controllers will also be covered. Theory is supported by appropriate labs.