

**EL102**  
**Electrical Lab Fundamentals**  
**4 Credits**

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## EL102 Version: 3



# Electrical Lab Fundamentals

## Calendar Description

This course covers basic control circuits, safety, splicing and termination of conductors, basic alarm systems, and use of basic electrical hand tools. It also includes WHMIS, basic job skills such as wire pulling, termination, and conduit bending, and basic wiring methods for non-metallic cable, flexible conduit, and metal conduit.

## Rationale

This is a required course for the Pre-employment Electrical program. This course is designed to develop knowledge and hand skills required in the electrical industry.

## Prerequisites

None

## Co-Requisites

[EL100](#), [EL101](#), [EL110](#)

## Course Learning Outcomes

Upon successful completion of this course, students will be able to

1. outline WHMIS regulations and explain MSDS sheets.
2. demonstrate an understanding of Basic Tool safety.
3. demonstrate and explain meters, conductors and low voltage wiring splicing.
4. demonstrate low voltage splicing and switching techniques.
5. demonstrate correct wiring procedures for buzzers and chimes.
6. demonstrate basic alarm wiring and maintenance.
7. demonstrate techniques for relays and control switching.
8. demonstrate basic skills required for metallic conduit installation, wire pulling and termination.
9. demonstrate basic wiring methods for non-metallic sheathed cable and armoured cable.
10. demonstrate correct use of basic hand tools.

## Resource Materials

### *Required Text:*

*First year electrical for apprenticeship ILM modules.* Lakeland College, Vermilion, AB.

*First year electrical programs, School of Trades and Technology lab manual.*

Lakeland College, Vermilion, AB.

## Conduct of Course

EL102 is a lecture/lab course. This 120-hour course usually runs 2 hours a day over a 12-week period. Students are tested separately for WHMIS. The lab examinations are tentatively scheduled at the end of the second or third week, at the end of the fifth or sixth week and the final examination is held approximately at the end of the eighth week. Theory concepts are covered in a lecture/class discussion format supplemented with a variety of audio visual aids. The lab concepts are covered in a class discussion/team concept designed to prove theories. After week eight, the lab is designed for the student to wire portions of mock single dwelling residential buildings, bend and install conduits, design and install circuits, and test the circuits. Learning is instructor paced. The modules contain self-study questions and answers. Some computer-driven exercises may be used for delivery of this course.

## Evaluation Procedures

Labs	10%
S1 - Lab Exam #1	20%
S2 - Lab Exam #2	20%
S3 - Lab Exam #3	20%
E1- Final Lab Exam	<u>30%</u>
Total	100%

To receive credit for this course, students must achieve a minimum of 65% (1.0) on the lab portion.

## Grade Equivalents and Course Pass Requirements

*A minimum grade of C+ is required to pass this course.*

Letter	F	C+	B-	B	B+	A-	A	A+
Percent Range	0-64	65-69	70-74	75-79	80-84	85-89	90-94	95-100
Points	0.00	2.30	2.70	3.00	3.30	3.70	4.00	4.0

## Attendance

Regular attendance is essential for success in any course. Absence for any reason does not relieve a student of the responsibility of completing course work and assignments to the satisfaction of the instructor. Poor attendance may result in the termination of a student from a course(s).

In case of repeated absences due to illness, the student may be requested to submit a medical certificate. Instructors have the authority to require attendance at classes.

## Course Units/Topics

<b>MODULE</b>	<b>HEADINGS</b>
WHMIS	
030101b	Climbing, Lifting, Rigging and Hoisting
030101c	Hazardous Materials and Fire Protection
030101e	Electrical Safety
030104a	Meters
030104b	Conductors
030104c	Splicing and Terminating (Low Voltage)
030104d	Resistors
030104e	Switching Circuits
030104f	Relays and Controls
030104g	Extra Low Voltage Switching
030104h	Alarm Systems and Smoke Alarms



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