

EL100
Electrical Theory

4 Credits

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EL100 Version: 3



Electrical Theory

Calendar Description

This introductory course is designed to develop skills in and increase knowledge of the principles of electricity, magnetism, and electrical measuring devices. The student is introduced to resistors, DC sources, circuits and conductors. The student also studies basic mathematics as it applies to the electrical field.

Rationale

This is a required course for the Pre-employment Electrical program. This course provides students with the knowledge and ability to install, alter, repair and maintain electrical systems designed to provide heat, light, power, control signals or fire alarms for all types of buildings, structures and premises.

Prerequisites

None

Co-Requisites

EL101, EL102, and EL110

Course Learning Outcomes

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

1. explain the composition of matter.
2. demonstrate basic mathematical skills required in the industry.
3. explain electrical current, voltage and resistance.
4. outline and explain the various types of circuits and conductors.
5. explain work, energy, power, efficiency and line loss.
6. explain how batteries work.
7. outline and explain electromagnetism and electromagnetic induction.
8. explain power generation.

Resource Materials

Required Text:

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

Reference Text (recommended):

Herman, S. L. (2002). *Delmar's standard textbook of electricity* (4th ed.). Albany, New York: Delmar Publishers.

Conduct of Course

EL100 is a 120-hour course that usually runs 2 hours a day over a 12-week period. Supervised exams are delivered after module 2, 5, 7, and a final examination after Module 11. This is a lecture course. Theory concepts are covered in a lecture/class discussion format, supplemented with a variety of audio visual aids. Modules contain self-study questions and answers. Some computer-driven exercises may be used for delivery of this course.

Evaluation Procedures

Circuit Fundamentals	
Supervised Examination 1	25%
Supervised Examination 2	25%
Final Examination	50%
Total	100%
EMF Sources	
Supervised Examination 1	40%
Final Examination	60%
Total	100%

The two sections above will be combined to calculate the final grade. Circuit fundamentals 65% and EMF sources 35%

To receive credit for this course, students must achieve a minimum of 65% (Grade Point 1.0) on this theory portion. Theory exams are written without reference.

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

MODULE	HEADINGS
030102a	First Period Math Applications
030102b	Current, Voltage & Resistance
030102d	Characteristics of Conductors
030102c	Series Resistive Circuits
030102d	Parallel Resistive Circuits
030102e	Series-Parallel Circuits
030102f	Edison 3-wire Distribution Systems
030102g	Work, Energy, Power, and Efficiency
030103a	Methods of Producing EMF
030103b	Cells and Batteries
030103c	Magnetism and Electromagnetism
030102d	Generators



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