

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY
SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: ELECTRICAL FUNDAMENTALS
Code No.: ELR 100-7
Program: ELECTRICAL/ELECTRONIC/COMPUTER
Semester: ONE
Date: AUGUST 1983
Author: JIM HAMILTON

New: _____ Revision: X

APPROVED:

J.P. Crozitto

Chairperson

Date

ELECTRICAL FUNDAMENTALS
Course Name

ELR 100-7
Course Number

PHILOSOPHY/GOALS:

When the student has completed this course, he should be familiar with the basic concepts of DC and AC circuits, which are necessary so that the student can continue to progress through the Electrical/Electronic Technician program.

METHOD OF ASSESSMENT (GRADING METHOD):

Students will be assessed on a series of written exams and lab work.

Sixty percent of total mark is for theory and forty percent for lab work.

Grades will be "A", "B", "C", or "R"

TEXTBOOK(S):

Fundamentals of Electric Circuits - David A. Bell

ELECTRICAL FUNDAMENTALS

ELR 100-7

TOPIC NO.	PERIODS		TOPIC DESCRIPTION
	<u>Theory</u>	<u>Lab</u>	
1	3	3	<u>The Nature of Electricity</u> Current and Potential Source of Electricity Circuit Diagrams Electric Shock
2	8	4	<u>S.I. Units</u> Scientific Notation Unit of Force Work Energy and Power Temperature and Heat
3	10	4	<u>Electrical Units</u> Units of Current and Charge Conventional Current and Electron Flow Direct Current and Alternating Current EMF, Potential Difference and Voltage Resistance and Conductance Ohm's Law Efficiency and Power
4	2	2	<u>Conductors</u> Insulators and Resistors Temperature Effect Conductor Resistivity
5	6	4	<u>Series Circuits</u> Current in a Series Circuit Voltage Drop in a Series Circuit Voltage Divider Power in a series Circuit Open Circuit and Short Circuit in a Series Circuit

ELECTRICAL FUNDAMENTALS

ELR 100-7

<u>TOPIC NO.</u>	<u>PERIODS</u>		<u>TOPIC DESCRIPTION</u>
	<u>Theory</u>	<u>Lab</u>	
6	4	4	<u>Parallel Circuit</u> Volatage and Current in a Parallel Circuit Circuit Current Divider Power in a Parallel Circuit Open Circuits and Short Circuits in a Parallel Circuit
7	10	4	<u>Series-Parallel Circuits</u> Equivalent Series-Parallel Circuit Current in a Series-Parallel Circuit Voltage Drops in a Series-Parallel Circuit
8	4	3	<u>Network Theorems</u> Superposition Theorem Theuenins Theorem
9	8	2	<u>Inductance</u> Lenz's Law Induced EMF and Current Self-Inductance Mutual Inductance Energy Stored in an Inductive Circuit Inductors in Series and Parallel Series Aiding and Series Opposing Time Constant

ELECTRICAL FUNDAMENTALS

ELR 100-7

<u>TOPIC NO.</u>	<u>PERIODS</u>		<u>TOPIC DESCRIPTION</u>
	<u>Theory</u>	<u>Lab</u>	
10	7	2	<u>Capacitance</u> Electric Charge Capacitance and Capacitor Dimensions Capacitors in Series and Parallel Energy Stored in Charged Capacitors Time Constant
11	6	2	<u>Alternating Current and Voltage</u> Generation of AC Voltage Frequency and Phase Angle AC Resistive Load Maximum Power Average and RMS Values of Sine Waves