

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

COURSE OUTLINE

COURSE NAME: Engineering Science

CODE NO.: ELR-105

PROGRAM: Electrical / Electronics

SEMESTER: One

DATE: September 1995

PREVIOUS  
OUTLINE DATED: January 1994

AUTHOR: Edward Sowka

NEW:      REVISION: X

APPROVED:

Bill Armstrong  
CO-ORDINATOR

Aug 28, 1995  
DATE

J.P. Crockett  
DEAN

95-08-28  
DATE

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**TOTAL CREDIT HOURS:** 51

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**PREREQUISITE(S):** None

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**PHILOSOPHY/GOALS:**

This course will provide the student with a basic understanding of engineering principles. The student will study physical quantities and scientific fundamentals encountered in industrial process and perform calculations and conversions associated with these quantities.

**STUDENT PERFORMANCE OBJECTIVES:**

UPON SUCCESSFUL COMPLETION OF THIS COURSE, THE STUDENT WILL BE ABLE TO:

1. Understand SI and British Units, scientific notation and engineering prefixes.
2. Perform calculations and conversions associated with the above objective.
3. Perform calculations and conversions accurately with electrical and magnetic units.
4. Understand fundamental concepts of Sound and Light.
5. Understand fundamental concepts of Temperature and Heat.

**TOPICS TO BE COVERED:**

1. Fundamentals of Measurement

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<u>LEARNING ACTIVITIES</u>	<u>REQUIRED RESOURCES</u>
<p>1. <u>Fundamentals of Measurement</u></p> <p>UPON SUCCESSFUL COMPLETION OF THIS BLOCK OF WORK, THE STUDENT WILL BE ABLE TO:</p> <p>1.1 State the Electrical and Magnetic quantities and unit of measure of each.</p> <p>1.2 Specify the symbol of each quantity and unit.</p> <p>1.3 Express any number using scientific notation and engineering prefixes.</p> <p>1.4 Perform calculations and conversions with quantities expressed in scientific notation.</p> <p>1.5 Perform calculation and conversions using SI and British Units.</p>	<p>-Instructor Handouts and Lectures</p> <p>-Text: Electronic Fundamentals by; Floyd (Chapter 1)</p> <p>- Reference: Electrical Fundamentals by; D.A. Bell</p>
<p>2. <u>Sound</u></p> <p>UPON SUCCESSFUL COMPLETION OF THIS BLOCK OF WORK, THE STUDENT WILL BE ABLE TO:</p> <p>2.1 Understand the following characteristics of Sound; Frequency, Period, Wavelength, Harmonics, Resonance, Interference, Reflection, Attenuation, Decibels and Doppler Effect.</p> <p>2.2 Understand the operation and construction of sound transducers such as microphones and speakers.</p> <p>2.3 Perform calculations in Decibels.</p>	<p>- Instructor Handouts and Lectures</p>



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<b><u>LEARNING ACTIVITIES</u></b>	<b><u>REQUIRED RESOURCES</u></b>
<p>3. <u>Light</u></p> <p>UPON SUCCESSFUL COMPLETION OF THIS BLOCK OF WORK, THE STUDENT WILL BE ABLE TO:</p> <p>3.1 Understand light and its characteristics.</p> <p>3.2 Understand the frequency spectrum of visible and non-visible light.</p> <p>3.3 Understand the operation of light detecting and light emitting devices.</p>	<p>-Instructor Handouts and Lectures</p>
<p>4. <u>Temperature and Heat</u></p> <p>UPON SUCCESSFUL COMPLETION OF THIS BLOCK OF WORK, THE STUDENT WILL BE ABLE TO:</p> <p>4.1 Understand heat and its characteristics.</p> <p>4.2 Understand temperature scales and convert between them.</p>	<p>-Instructor Handouts and Lectures</p>

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**ADDITIONAL RESOURCE MATERIAL:** Assorted Videos

**REQUIRED STUDENT RESOURCES:** None

**RESOURCE MATERIAL AVAILABLE IN COLLEGE LIBRARY:**

**SPECIAL NOTES:**

1. The instructor reserves the right to modify the course (content and evaluation methods) as is deemed necessary to meet the needs of the students.
2. Students with special needs are encouraged to discuss required accommodations, confidentially, with the instructor. (ie. Physical limitations, Visual/Hearing impairments etc.).
3. Attendance to lab (practical) activities is compulsory, unless discussed with the instructor in advance of the absence. It is a fact that, attendance and your final grade are directly related.

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**METHODS OF EVALUATION:**

1. The grading system is as follows;

A+ = 90% - 100%

A = 80% - 89%

B = 70% - 79%

C = 55% - 69%

R = Repeat (Student must repeat the course)

X = Temporary grade assigned, at the instructors discretion, to a student who has not successfully completed the course because of extenuating circumstances (ie. serious illness etc.).  
(Refer to Student Handbook)

2. The final grade will be derived as follows;

Tests - 50% of Final

Assignments and Quizzes - 40% of Final

Subjective Evaluation - 10% of Final \*\*

\*\* Subjective evaluation is an ongoing evaluation based on the students attendance, participation, attitude and professional work ethic.

3. At least 1 weeks notice will be given for tests. Quizzes can be given without notice.