

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

COURSE OUTLINE

COURSE OUTLINE: FUNDAMENTALS OF ELECTRONICS  
CODE NO.: ELN112-5  
PROGRAM: ELECTRONICS TECHNICIAN/TECHNOLOGY  
SEMESTER: 2  
DATE: JANUARY, 1993  
PREVIOUS  
OUTLINE DATED: JANUARY, 1992  
AUTHOR: DOUG FAGGETTER

NEW: \_\_\_\_\_ REV.: A

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APPROVED:

*L. Chayath*  
DEAN

93-01-11  
DATE

COURSE NAME	CODE NO.
FUNDAMENTALS OF ELECTRONICS	ELN112

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TOTAL CREDIT HOURS: 5

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PREREQUISITE(S): ELN106 ELN109

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#### PHILOSOPHY/GOALS:

This course is intended to provide the student with a solid background in electronic analog devices, circuits and their applications.

The course will cover bipolar junction transistors, operational amplifiers, JFETS, pulse circuits and related circuit applications.

The practical work will further develop the student's testing and troubleshooting skills using various test equipment.

#### STUDENT PERFORMANCE OBJECTIVES:

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

1. Have a fundamental knowledge of transistors and operational amplifiers.
2. Be able to simplify and analyze basic amplifier circuits and describe characteristics of each type.
3. Be able to analyze and describe pulse circuit operations and their associated waveforms.

TOPICS TO BE COVERED:

1. TRANSISTOR BJT AMPLIFIERS
2. OPERATIONAL AMPLIFIERS
3. FIELD EFFECT TRANSISTORS
4. PULSE CIRCUITS AND RELATED APPLICATIONS

REQUIRED STUDENT RESOURCES:

ELECTONICS FUNDAMENTALS  
-BY FLOYD, 2ND EDITION

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**LEARNING ACTIVITIES**

**REQUIRED RESOURCES**

1.0 TRANSISTOR (BJT) AMPLIFIERS

TEXT: CHAPTER 18, 19

1.1 Transistor Characteristics

- BJT
- Biasing
- Amplifiers

1.2 Class B power amps

2.0 OPERATIONAL AMPLIFIERS (OPAMPS)

TEXT: CHAPTER 20, 21

2.1 Differential AMP

2.2 Symbol Diagram, Operation and Characteristics

2.3 OPAMP circuits

- Inverting Amp
- Non-inverting Amp
- Comparator
- Adder

3.0 FIELD EFFECT TRANSISTORS

TEXT: CHAPTER 18

3.1 JFET

- Symbol, characteristics, operation
- JFET Amplifiers

3.2 MOSFETs

- Symbol, characteristics, operation and applications

4.0 PULSE CIRCUITS

TEXT: CHAPTER 8, 15

4.1 Ideal Pulse

4.2 RC waveshaping circuits

- integrator
- differentiator

4.3 Circuit Applications

- Transistor as a switch
- Multivibrators (555 timer)
- Opto-coupler

## ADMINISTRATIVE AND EVALUATION PROCEDURES

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### TESTING

- a) Written tests based upon theory objectives will occur following the completion of each theory block. Students will be given advance notice of test dates (1 week minimum). Quizzes (worth a maximum of 5%) may be given without notice. There will be no rewrites for students missing quizzes.
- b) Testing of lab objectives will occur concurrent with specific lab activity. This will include evaluation of lab reports submitted and lab performance.
- c) If a student misses a test he/she must have a valid reason (medical or family emergency). In addition the school must be notified before the scheduled test sitting. The student should contact the instructor involved. If the instructor cannot be reached leave a message with the Dean's office or the college switchboard. If this procedure is not followed the student will receive a mark of zero on the test with no rewrite option.

### GRADING

- a) Grading is done using the following definitions:
  - Consistently outstanding performance.....A+ (90-100)%
  - Outstanding performance.....A (80- 89)%
  - Above average performance.....B (70- 79)%
  - Satisfactory performance.....C (55- 69)%
  - Repeat course.....R (less than 55%)
- b) Lab reports are due one week after the experiment was scheduled to be completed. Late reports are penalized 5% per day.
- c) The grading weight will be 30% for the lab and 70% for tests.
- d) A final overall accumulated mark of 55% is the minimum requirement for course credit with the added restriction that neither the theory or the lab part of the course can be less than 55%.

### UPGRADING

Rewrite tests and X-grades will not normally be given except under exceptional circumstances.

### ATTENDANCE

Attendance for the laboratory classes is compulsory.

