#153

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: ELECTRONIC FUNDAMENTALS

CODE NO.: ELN 100 - 6 **SEMESTER:** ONE

PROGRAM: ELECTRICAL/ELECTRONIC TECHNICIAN/TECHNOLOGY

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APPROVED: D M McCormack 93-08-30
DEAN DATE

ELECTRONIC FUNDAMENTALS — COURSE NAME
ELN100-6 — CODE NO.

TOTAL CREDIT HOURS 90 HRS.

PREREQUISITE(S):_____

I. PHILOSOPHY/GOALS:

To provide the student with a solid background in the fundamentals of electronic devices and circuits, which is necessary for the study of the more specialized aspects of electronics.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1) Become more familiar with solid-state devices (diodes, transistors)

2) Understand the operation of basic dc power supply units and BJT amplifier circuits

3) Be able to analyze, construct, test, troubleshoot various circuits using theoretical and practical methods, employing various test equipment

III. TOPICS TO BE COVERED:

1) Fundamental Solid-State Principles

2) Diodes and Basic Power Supplies

3) Bipolar Junction Transistors (BJT's)

4) BJT Amplifiers
   a) Configurations
   b) Biasing Methods
   c) DC & AC Circuit Analysis

IV. LEARNING ACTIVITIES	REQUIRED RESOURCES

1) Semiconductor Diodes
- introduction to current flow
- review of basic theorems
- semiconductor theory
- energy levels
- doping
- PN diode formation
- diode biasing methods
- diode circuit analysis
  - approximate method
  - load lines
	Chapters 1 & 2

2) DC Power Supplies - block diagram - sine wave analysis - power transformers - rectifier circuits and characteristics - filter networks - diode ratings - voltage multipliers - zener diode characteristics - zener voltage regulator	**Chapter 3**
3) Transistor (BJT) Amplifier - NPN/PNP transistor characteristics - regions of operation - transistor biasing methods - transistor amplifier configurations and DC circuit analysis - transistor ratings and specifications - CE amplifier AC analysis - amplifier troubleshooting - cascaded amplifiers - input and output impedance - amplifier voltage gain - CC & CB amplifier analysis - multi-stage amplifiers	**Chapters 5, 6, 7, 8 & 9**

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V. **EVALUATION METHODS:** (INCLUDES ASSIGNMENTS, ATTENDANCE REQUIREMENTS, ETC.)

Assessments will consist of major tests and quizzes for approximately 60% of the overall mark.

Practical tests, lab quizzes, lab book and general lab assessment will make up approximately 30% of the overall mark. (LAB ATTENDANCE IS COMPULSORY)

A subjective evalation, based on demonstrated skills in the use of equipment, work habits, participation, attitude, attendance and professional work ethics will make up approximately 10% of the overall mark.

The student must successfully pass both portions to achieve a passing grade.

The following grades will be assigned to students in post-secondary programs:

A+	Consistently outstanding (90%)
A	Outstanding achievement (80% to 89%)
B	Consistently above average achievement (66% to 79%)
C	Satisfactory or acceptable achievement in all areas subject to assessment (55% to 65%)
R	Repeat -- The student has not achieved the objectives of the course and the course must be repeated
X	A temporary grade, limited to situations with extenuating circumstances, giving a student additional time to complete course requirements

VI. **REQUIRED STUDENT RESOURCES**

1) Text -- Introductory Electronic Devices and Circuits (2nd ed) by Paynter (Prentice-Hall)

2) Lab Manual -- Paynter

3) Protoboard, tools and supplies as required

VII. SPECIAL NOTES

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.