

SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: POWER ELECTRONIC SYSTEMS

CODE NO.: ELR317 - 3

PROGRAM: ELECTRICAL TECHNOLOGY

SEMESTER: FIVE

AUTHOR: R. MCTAGGART

DATE: MAY 1992

PREVIOUS
OUTLINE DATED: SEPTEMBER 1990

APPROVED:

W. Filipowich
COORDINATOR

June 1, 1992
DATE

L.P. Crayth
DEAN

92-06-02
DATE

I. PHILOSOPHY/GOALS:

ELR 236 WHICH INTRODUCED POWER ELECTRONIC DEVICES AND SYSTEMS. THE THEORETICAL PORTION OF THE COURSE WILL BE INTEGRATED WITH EXTENSIVE LAB WORK.

II. STUDENT PERFORMANCE OBJECTIVES:

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

1. PERFORM FOURIER ANALYSIS OF BASIC PERIODIC WAVEFORMS COMMON TO POWER ELECTRONIC CIRCUITS.
2. PROVIDE DETAILED EXPLANATIONS OF THE OPERATION OF INVERTER POWER CIRCUITS.
3. EXPLAIN THE OPERATION OF AC AND DC POWER SUPPLIES.
4. ASSEMBLE AND TEST VARIOUS POWER ELECTRONIC CIRCUITS.
5. OPERATE AND TROUBLESHOOT POWER ELECTRONIC DRIVE PACKAGES.
6. DESCRIBE METHODS OF PROTECTING POWER ELECTRONIC DEVICES.

III. TOPICS TO BE COVERED:

1. FOURIER ANALYSIS
2. INVERTERS
3. POWER SUPPLIES
4. DC DRIVES
5. AC DRIVES
6. PROTECTION OF DEVICES AND CIRCUITS

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LEARNING ACTIVITIES	REQUIRED RESOURCES
6. PROTECTION OF DEVICES & CIRCUITS - COOLING AND HEAT SINKS - SNUBBER CIRCUITS - REVERSE RECOVERY TRANSIENTS - SUPPLY AND LOAD SIDE TRANSIENTS - VOLTAGE PROTECTION - CURRENT PROTECTION	CH. 15

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TESTS	60%
LAB EXERCISES	40%
TOTAL	100%

THE GRADING SYSTEM USED WILL BE AS FOLLOWS:

A+ = 90 - 100% A = 80 - 89% B = 70 - 79% C = 55 - 69%
R REPEAT

NOTES: IN ORDER TO OBTAIN A PASSING GRADE THE STUDENT MUST MAINTAIN A MINIMUM 55% AVERAGE IN BOTH TEST SCORES AND LAB EXERCISES.

IF A STUDENT MISSES A TEST HE/SHE MUST HAVE A VALID REASON (ie. 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.

VI. REQUIRED STUDENT RESOURCES:

TEXT BOOKS: POWER ELECTRONICS: CIRCUITS, DEVICES, AND APPLICATIONS, M. H. RASHID.

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE IN THE COLLEGE LIBRARY BOOK SECTION: