SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE:	COMPUTER INTERFACING
CODE NO. :	ELN302 **SEMESTER:** 6
PROGRAM:	ELECTRICAL/ELECTRONIC TECHNOLOGY
AUTHOR:	DOUG FAGGETTER
DATE:	JAN. 2002 **PREVIOUS OUTLINE DATED:** JAN. 2001
APPROVED:	

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 DEAN   **DATE**

TOTAL CREDITS:	5
PREREQUISITE(S):	CET228 CET331
HOURS/WEEK:	4

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I.   COURSE DESCRIPTION:
Students will study the architecture and programming of microcontrollers in computer interfacing applications. Lab activities involving computer interfacing to hardware and the associated software requirements will support the theory.

II.   LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

Upon successful completion of this course the student will demonstrate the ability to:

1)   Identify the major components in the architecture of a mircocontroller.

Potential Elements of the Performance:
- Identify the elements of the block diagram of the M68HC11 microcontroller.

2)   Identify and describe the function of the various registers in a microcontroller.

Potential Elements of the Performance:
-    Identify and describe the function of the accumulators, index registers, stack pointer, program counter and other registers in the M68HC11.

3)   Use the instruction set of the microcontroller to write assembly language programs.

Potential Elements of the Performance:
- Write the source code for various M68HC11 programs.
- Assemble the code.
- Download the S-record file to the M68HC11 evaluation board.
- Run the program.

4)   Use the on-board debug monitor program of the microcontroller.

Potential Elements of the Performance:
-    Use the BUFFALO monitor to perform various functions in the program development and debugging phase.
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5)   Interface analog signals to the microcontroller.

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Potential Elements of the Performance:
- Use the M68HC11 analog-to-digital converter in the analog interface process.

6)   Access the microcontroller peripherals and timer.

Potential Elements of the Performance:
- Write and test M68HC11 code to perform a variety of interfacing functions in the lab.

7)   Program the microcontroller using a high-level language.

Potential Elements of the Performance:
- Use a "C" compiler for the M68HC11 to write a program for the evaluation board.

III.   TOPICS:

1)   M68HC11 Microcontroller

2)   MHC6811 Registers and Addressing Modes

3)   M68HC11 Instruction Set

4)   Evaluation Board Monitor Commands

5)   Interfacing Analog Signals

6)   Output Peripherals

7)   PIC Processor Architecture, Instruction Set and
         C language Programming (if time permits)

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:
         Handouts

V.   EVALUATION PROCESS/GRADING SYSTEM:
The grading weight will be:
>   Theory   75%
>   Lab   25%

The following semester grades will be assigned to students in postsecondary courses:

Grade	Definition	Grade Point Equivalent
A+	90 - 100%	4.00
A	80 - 89%	3.75
B	70 - 79%	3.00
C	60 - 69%	2.00
R (Repeat)	59% or below	0.00
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field placement or non-graded subject areas.	
U	Unsatisfactory achievement in field placement or non-graded subject areas.	
X	A temporary grade. This is used in limited situations with extenuating circumstances giving a student additional time to complete the requirements for a course (see *Policies & Procedures Manual – Deferred Grades and Make-up*).	
NR	Grade not reported to Registrar's office. This is used to facilitate transcript preparation when, for extenuating circumstances, it has not been possible for the faculty member to report grades.	

VI.   SPECIAL NOTES:

Special Needs:
If you are a student with special needs (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your instructor and/or the Special Needs office. Visit Room E1204 or call Extension 493, 717, or 491 so that support services can be arranged for you.

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Retention of course outlines:
It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Plagiarism:
Students should refer to the definition of "academic dishonesty" in *Student Rights and Responsibilities*. Students who engage in "academic dishonesty" will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course outline amendments:
The Professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

VII.   PRIOR LEARNING ASSESSMENT:

Students who wish to apply for advanced credit in the course should consult the professor. Credit for prior learning will be given upon successful completion of a challenge exam or portfolio.

VIII. DIRECT CREDIT TRANSFERS:

Students who wish to apply for direct credit transfer (advanced standing) should obtain a direct credit transfer form from the Dean's secretary. Students will be required to provide a transcript and course outline related to the course in question.