

I. COURSE DESCRIPTION:

This is a lab course designed to allow the students to develop their problem solving skills by carrying through to completion several Embedded Microcontroller projects. Each project will have hardware and software components. Source code for software will be written in Assembly Language and in C language.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. *Writing Assembly Language Programs for a Microcontroller.*

Potential Elements of the Performance:

- Write source code in assembly language for an embedded microcontroller.
- Assemble and debug the program.

2. *Writing C Language Programs for a Microcontroller.*

Potential Elements of the Performance:

- Write source code in C language for an embedded microcontroller.
- Compile and debug the program.

3. *Building Interface Circuitry.*

Potential Elements of the Performance:

- Design and build hardware interface circuitry for an embedded microcontroller.

4. *Testing Completed Project.*

Potential Elements of the Performance:

- Test the completed project and debug the problems.

III. TOPICS:

1. ANALOG TO DIGITAL CONVERSION AND 7 SEGMENT DISPLAY PROJECT
2. KEY-PAD SCANNING AND DISPLAY PROJECT
3. STEPPER MOTOR CONTROL PROJECT.
4. PULSE-WIDTH MODULATION PROJECT

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

None.

V. EVALUATION PROCESS/GRADING SYSTEM:

Evaluation will be based on the following:

- 40% Achieving “milestone” dates for projects
- 40% Lab Reports
- 20% practicals and quizzes

If a quiz is missed for a legitimate reason, it can be rewritten at the end of the course.

The following semester grades will be assigned to students:

Grade	<u>Definition</u>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

VVI. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located on the portal form part of this course outline.

