SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ONTARIO

Sault College

COURSE OUTLINE

COURSE TITLE: **Hardware Applications Development**

CODE NO. :   **CST300**   SEMESTER: **6**

PROGRAM: **Computer Engineering Technology**

AUTHOR: **Fred Carella, Mark Allemang, Bazlur Rasheed**

DATE: **Jan, 2001**   PREVIOUS OUTLINE DATED: **Jan, 2000**

APPROVED:

_____   _____
                                                      DEAN   DATE

TOTAL CREDITS: **6**

PREREQUISITE(S):   **CST200**

HOURS/WEEK: **4**

Hardware Applications Development   **CST300**
Course Name   Code No.

I.   **COURSE DESCRIPTION:**

In this course students will study advanced hardware systems focusing on new
hardware developments. This course will broaden the students view of hardware
systems by studying hardware solutions from various manufacturers. Hands on,
hardware system projects will be assigned to exercise the students ability to work
with reasonably complex hardware systems. This course will develop the
students ability to integrate and apply various hardware/software platforms to the
solution of a problem.

II. A   **LEARNING OUTCOMES:**

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

1.   Compare, discuss and apply recent advancements in the hardware/software
         architectures.

2.   Build a reasonably complex hardware system.

3.   Write and present technical reports on complex hardware systems.

II. B   **LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

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

1.   **Compare, discuss and apply recent advancements in the
         hardware/software architectures.**

         Potential Elements of the Performance:
         - Discuss various features of new hardware architectures.
         - Describe in detail new architectures.
         - Discuss programming environment.
         - Describe its different uses.
         - Describe the interfaces offered.

Hardware Applications Development   **CST300**
Course Name   Code No.

2.   Build a reasonably complex hardware system.

   Potential Elements of the Performance:
   - Draw a block diagram of the proposed system.
   - Build the hardware system.
   - Write software to control the system.

3.   Write and present technical reports on the hardware system.

   Potential Elements of the Performance:
   - Write technical report on the chosen hardware project.
   - Present and demonstrate it to peers and panel of examiners.

III.   TOPICS:

1.   The handheld computing architecture.

2.   Embedded Controllers.

3.   Writing Device Drivers.

4.   Writing software to control hardware under various operating systems and hardware environments.

IV.   REQUIRED RESOURCES/TEXTS/MATERIALS:

1. Text Book:
   - Depends on project chosen.
   - The primary resource will be the Internet and instructor supplied notes.

2. Recommended Supplementary Reading:
   - The80x86 IBM PC and Compatible Computers (Volume I & II), 2nd edition, by- Muhammad Ali Mazidi and Janice Gillispie Mazidi, Prentice Hall, 1998.
   - Microcomputer Interfacing Handbook: A/D & D/A, 1st edition, by- Joseph J. Carr, TAB Books Inc., 1980.
   - Microprocessor Interfacing Techniques, 3rd Edition, by- Rodnay Zaks and Austin Lesea, Sybex, 1979.
   - Microprocessor Theory and Operation, 1st edition, by- J.A. Sam Wilson and Ron Walls, TAB Books Inc., 1998.
   - The M68HC11 Microcontroller, by- Michael Kheir, Prentice Hall, 1997.

Hardware Applications Development   **CST300**
Course Name   Code No.

V.   EVALUATION PROCESS/GRADING SYSTEM:

The mark for this course will be arrived at as follows:

Assignments and progress reports	30%
Final presentation and demonstration (30 minutes)	40%
Project report	30%
(The percentages shown above may have to be adjusted to accurately evaluate student skills. Students will be notified of any changes made.)	
Total	100%

To pass this course progress reports have to be submitted on their due dates.

ELIGIBILITY FOR X GRADES/UPGRADING OF INCOMPLETES

When a student's course work is incomplete or final grade is below 60%, there is the possibility of upgrading to a pass when a student meets all of the following criteria:

- The student's attendance has been satisfactory.
- An overall average of at least 50% has been achieved.
- The student has not had a failing grade in all of the theory tests taken.
- The student has made reasonable efforts to participate in class and complete assignments.

Note: **The opportunity for an X grade is usually reserved for those with extenuating circumstances.**   The nature of the upgrading requirements will be determined by the instructor and may involve one or more of the following: completion of existing labs and assignments, completion of additional assignments, re-testing on individual parts of the course or a comprehensive test on the entire course.

PROJECT:
Project activities represent a very important component of this course in which practical 'hands-on' skills will be developed. Because of this, attendance is mandatory and the satisfactory completion of all project activities is required. Evaluation of project progress will be done. It is the student's responsibility to discuss absences from regularly scheduled labs with the instructor so that alternate arrangements (where possible) can be made.

Hardware Applications Development   **CST300**
Course Name   Code No.

PROJECT REPORTS:
Project report requirements will be detailed for each project individually.

ASSIGNMENTS:
Required format for lab assignments will be detailed by the instructor before labs are assigned.

ATTENDANCE:
Attendance is mandatory. Absenteeism will affect a student's ability to succeed in this course. Absences due to medical or other unavoidable circumstances should be discussed with the instructor. There will be an attendance factor included in the lab evaluation.

The following semester grades will be assigned to students in post-secondary 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.	

Hardware Applications Development   **CST300**
Course Name   Code No.

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.

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 post-secondary 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.