SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: COMPUTER SYSTEMS II

Code No.: CET220-5   Semester: THREE

Program: COMPUTER ENGINEERING TECHNOLOGY

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APPROVED: _L. Charuette_   _92-07-27_
                    Dean   Date

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TOTAL CREDIT HOURS: 75

PREREQUISITES: CET129 - STRUCTURED PROGRAM DEVELOPMENT

I.   PHILOSOPHY/GOALS:

This course develops a student's ability to use the C Programming language effectively. In addition, two operating systems are introduced: first, the UNIX operating system (as implemented in ULTRIX-32), including its commands and utilities; and second, the VAX/VMS operating system. This second component will cover the software architecture and organization of VAX/VMS systems.

A series of C programming assignments will be done in both a PC and a VAX/VMS environment. The practical skills necessary to operate in a UNIX environment will also be reenforced with assignments.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1.   Be able to use the elements of the C Programming language to solve problems in both a VAX and a Turbo C environment.

2.   Be able to use the commands and utilities of the UNIX operating system, as implemented in ULTRIX-32 to manage files, directories and processes effectively.

3.   Be able to describe the basic mechanisms used in the VMS Operating System to manage its resources.

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III. TOPICS TO BE COVERED:

1. C Programming structure, style, data types, expressions and operators.

2. Decision-making and looping structures in C.

3. String-handling and terminal I/O in C.

4. Arrays and pointers.

5. Functions, structures and unions.

6. File I/O in C.

7. ULTRIX commands and the UNIX environment.

8. VMS system architecture.

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IV. LEARNING ACTIVITIES	REQUIRED RESOURCES
	TEXT:
BLOCK 1- C PROGRAMMING FUNDAMENTALS	"C PRIMER PLUS"
	by
1. Be able to describe and use C program structure and style correctly.	Waite, Prata, and Martin
2. Describe and use the VAX C and Turbo C environments for program generation and testing including C preprocessor directives; in particular, macros.	Chap. 1,2,16
3. Describe and correctly use the various forms of C expressions, statements and operators.	Chap. 5, 15
4. Be able to define constants, declare variables, understand the different data types and the use of casting.	Chap. 3
5. Be able to use standard C functions for basic string handling and terminal I/O.	Chap. 4,8
6. Be able to use the available decision making and looping structures in C as elements of working programs.	Chap. 6,7
7. Be able to solve problems using the elements of C described above in both a VMS and a PC environment.	
8. Be able to describe the advantages and disadvantages of C as a programming language.	
BLOCK 2 - ADVANCED C PROGRAMMING	
1. Understand the role of and be able to use functions in C, including the nature of ANSI C prototyping of functions. In addition, be able to use the various string-handling functions available in C.	Chap. 9,11
2. Be able to use arrays and pointers effectively in C programs.	Chap. 10
3. Be able to use structures and unions and	Chap. 14

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be able to describe the various ways of
specifying them.

4. Be able to describe the various storage   Chap. 13
   classes in C.

5. Understand the nature of recursion and   Chap. 9
   dynamic memory allocation and how they
   can be implemented in C.

6. Be able to use C functions for file I/O.   Chap. 12

7. Be able to use other specialized C
   library functions. [as time permits.]

8. Be able to use the elements of C covered
   in this Block to solve assigned problems
   in a VMS or Turbo C environment.

BLOCK 3 - THE UNIX OPERATING SYSTEM

Notes supplied
by the
instructor or
text, as
assigned.

1. Understand the history of the UNIX
   operating system and its advantages and
   disadvantages in relation to other
   operating systems.

2. Understand the operating environment of
   ULTRIX from a users point of view.

3. Understand the ULTRIX file system, and be
   able to manage directories. In addition,
   be able to copy files back and forth
   between a VMS and an ULTRIX node.

4. Understand and be able to use
   redirecting, filtering and piping.

5. Be able to use a UNIX Text editor.

6. Be able to use ULTRIX Mail Utilities.

7. Be able to use shell command files and
   use basic commands to manage processes.

8. Understand and be able to use a variety
   of ULTRIX commands and know their VMS

equivalents. (where they exist.)
[as time permits]

BLOCK 4 – THE VMS OPERATING SYSTEM

"VMS Notes"

This block provides a brief theoretical
introduction to VMS internals.

1.   Describe the hardware organization of the
     VAX family of computers.

2.   Describe the concept of a program, an
     image, a process and a job including the
     way in which the VMS operating system
     manages them.

3.   Describe the way in which VMS manages the
     memory resources of the computer.

4.   Discuss the use of interrupts and
     exceptions on the VAX.

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V.   METHOD OF EVALUATION:

      4 WRITTEN TESTS   60%

              2 C tests   (20 % each)
              1 Unix test   (10%)
              1 VAX/VMS test   (10%)

      ASSIGNMENTS   30%

      QUIZZES and PRACTICAL TESTS   10%

      (The percentages shown above may vary slightly where
      circumstances warrant.)

GRADING SCHEME

A+   90   -   100%
A   80   -   89%
B   70   -   79%
C   55   -   69%
I   Incomplete
R   Repeat

UPGRADING OF INCOMPLETES

When a student's course work is incomplete or final grade is below
55%, there is the possibility of upgrading to a pass when a
student meets the following criteria:

1.   The students attendance has been satisfactory.
2.   An overall average of at least 40% has been achieved.
3.   The student has not had a failing grade in all of the theory
      tests taken.
4.   The student has made reasonable efforts to participate in
      class and complete assignments.

ATTENDANCE:

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, so that
remedial activities can be scheduled. Absence from tests without

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pre-arranged authorization may result in a zero grade being applied. It is the student's responsibility to consult with the instructor before such absences.

LATE PENALTY FOR ASSIGNMENTS

A late penalty of up to 10% per week may be applied to assignments which are not handed in by the due date, unless extenuating circumstances exist.

VI.   REQUIRED STUDENT RESOURCES:

TEXT BOOKS:

1.   "C PRIMER PLUS" by

       M. Waite, S. Prata, and D. Martin
       (Howard Sams & Company)

2.   * A UNIX textbook may be specified by the instructor

3.   Course Notes as distributed by the instructor or bookstore.

VII. ADDITIONAL RESOURCE MATERIALS AVAILABLE:

To be identified during the course.

VIII.   SPECIAL NOTES:

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

Your instructor reserves the right to modify the course as deemed necessary to meet the needs of students or take advantage of new or different learning opportunities.