SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: INTRODUCTION TO PROGRAMMING

Code No.:   CET106-4   Semester: 1

Program: COMPUTER ENGINEERING TECHNOLOGY

Author: TYCHO BLACK

Date: SEPT., 1993   Previous Outline Dated: SEPT.,1992

APPROVED: _____   93-06-22
                       Dean   Date

INTRODUCTION TO PROGRAMMING   CET106-4
COURSE NAME   CODE NO.

TOTAL CREDIT HOURS: 60

PREREQUISITES: None

I.   PHILOSOPHY/GOALS:

This course is an introductory computer programming course which utilizes the Fortran programming language on the VAX computer to develop fundamental skills in programming concepts and utilization of the computer in problem solving. It is not intended to be a rigorous problem-solving course, but rather a course in which the student will learn the necessary skills to use the computer and the Fortran language effectively. These skills will be extended in successive courses such as CET129, Structured Program Development, in second semester.

II. STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course the student will:

1.   Use the VAX computer and the VMS operating system to create, compile, link and run Fortran programs.

2.   Use VMS commands to manage files and directories on the VAX.

3.   Develop algorithms to describe the solution of typical problems to be solved with the computer, and implement them with the Fortran language.

4.   Describe the fundamental structures of computer programs and how they are implemented in Fortran.

5.   Use the VAX Mail, Phone, Help and other useful utilities.

INTRODUCTION TO PROGRAMMING   CET106-4
COURSE NAME   CODE NO.

III. TOPICS TO BE COVERED:

1.   Vax/VMS fundamentals.

2.   Fortran programming.

3.   VAX utilities.

IV.   LEARNING ACTIVITIES   REQUIRED RESOURCES

I- VAX FUNDAMENTALS   TEXT:

During this block the student will study the   "VMS User's
VAX computer and the VMS Operating System.   Guide"
At the end of this block the student will be
able to:

1.   Describe the organization of the Vax   Chap. 1
     computer and the function of its parts.

2.   Describe the typical software components
     of the system and their function.

3.   Describe the Sault College computer
     network and the various ways of
     interacting with it.

4.   Learn to use the network facilities and
     DCL (Digital Command Language) to:

     a) Log on and off the system.

     b) Delete, Purge, Rename, Copy, Print   Chap. 2
     and display the contents of files.

     c) Discuss the characteristics of   Chap. 3,4
     editors, and use the features of the VMS
     editors EVE and EDT as requested.

     d) Describe the process of editing,

INTRODUCTION TO PROGRAMMING   CET106-4
COURSE NAME   CODE NO.

compiling, linking and running a
program. Discuss the differences
between source, object, list and
executable files.

e) Create and maintain directory   Chap. 2
structures and their associated files
efficiently.

f) Develop and maintain a useful
LOGIN.COM file .

g) Use the Help facility to clarify the
operation of DCL commands.

h) Use the Mail and Phone utilities to   Chap. 5
communicate on-line and manage messages
between users.

BLOCK II- INTRODUCTION TO FORTRAN PROGRAMMING

During this block the student will learn to   **"VAX Fortran"**
develop algorithms to describe the solution   by David
to problems. The student will learn the   Weinman
fundamentals of the Fortran programming
language, and the techniques associated with
applying it to solve problems. At the end of
this block the student will be able to:

1.   Describe the form of a Fortran program;   Chap. 1,2
      in particular, the statements and the
      syntax associated with a simple Fortran
      source file.

2.   Discuss and use of Fortran data types,   Chap. 3
      including Integer, Real, Double
      Precision and Character and the
      conventions for naming entities.

3.   Describe the three basic structures of   Instructors
      structured programming: sequence,   Notes

INTRODUCTION TO PROGRAMMING
COURSE NAME

selection and repetition.

4.   Describe various procedures for   Instructors
     developing and describing algorithms for   Notes
     solving problems including flowcharts
     and pseudocode.

5.   Describe and be able to apply the five   Instructors
     step process for program development.   Notes

6.   Describe the various ways of declaring   Chap. 2
     data and initializing variables and
     constants.
7.   Perform simple screen input and output.   Chap. 2

8.   Write arithmetic expressions to
     calculate values of variables, and use   Chap. 3
     various numeric intrinsic functions
     available in Fortran.

BLOCK III- FORTRAN PROGRAMMING

During this block the student will learn to
apply the major statements available in
Fortran to solve problems of greater
complexity. At the end of this block the
student will be able to describe and use the
following Fortran instructions and
techniques, including the writing, testing
and debugging of programs using them:

1.   Use looping mechanisms such as DO and DO   Chap. 4, 5
     WHILE to enable repetition in programs.
2.   Use Relational and Logical operators and   Chap.5
     expressions in decision-making.
3.   Perform input and output with terminal   Chap. 4 and 14
     format files.
4.   If statements and decision-making within   Chap. 6
     programs.
5.   Use Format statements to control the way   Chap. 7
     that the output is displayed.
6.   Perform character operations on strings.   Chap. 12

7.   Demonstrate appropriate programming
      style and documentation procedures.

V.   METHOD OF EVALUATION:

          3 THEORY TESTS (22% each)   66%

          ASSIGNMENTS and LAB TESTS   30%

          ATTENDANCE   4%

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

Notes: 1.   Lab work and assignments must be complete to the
                instructor's satisfaction for a passing grade to
                be achieved.

          2.   A passing average on the theory tests is a
                requirement for passing this course.

          3.   Before tests the instructor will provide details
                of the specific objectives to be tested.

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

INTRODUCTION TO PROGRAMMING   CET106-4
COURSE NAME   CODE NO.

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. Attendance is encouraged because many things are discussed
and learned in class that may not be specifically evaluated on
tests. Absences due to medical or other unavoidable circumstances
should be discussed with the instructor, so that remedial
activities can be scheduled.

Up to 4% of the final grade will be based on attendance.

VI. REQUIRED STUDENT RESOURCES:

TEXT BOOKS:

1. "VAX FORTRAN" by David Weinman (Nelson Canada)

2. "The VMS User's Guide" by Peters and Holmay (Digital Press)

VII. SPECIAL NOTES:

1. 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.

2. 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.

3. The Blocks of objectives will not necessarily be covered in the
order shown in this course outline.