SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: **STRUCTURED PROGRAM DEVELOPMENT**

Course No.: **CET129**

Program: **COMPUTER ENGINEERING TECHNOLOGY**

Semester: **SECOND(2)**

Date: **JANUARY 1993**

Author: **FRANK TURCO**

Previous Outline Dated: **JANUARY 1992**

APPROVED: _____ Dean _____ 93-01-08 Date

STRUCTURED PROGRAM DEVELOPMENT CET129

C O U R S E O U T L I N E

PREREQUISITES: CET106

LENGTH OF COURSE: 4 HOURS PER WEEK

TOTAL CREDIT HOURS: 64

I. PHILOSOPHY/GOALS

This course is intended to provide the student with a firm base of VAX/VMS concepts and structured programming concepts. The student is also taught the fundamentals of VAX usage through the study of DCL programming techniques and the use of VAX utilities. The student applies structured programming concepts to more complex problems and will improve his/her skills in the Fortran programming language.

II. PERFORMANCE OBJECTIVES

Upon successful completion of this course the student will:

1. Use the EVE editor.
2. Understand and apply a variety of commonly used DCL commands such as:
   Assign, GOTO, IF, Inquire, Purge, SET commands, SHOW commands,
3. Create DCL command procedures.
4. Understand and apply file and directory protection options.
5. Follow proper Structure and problem solving Techniques.
6. Create Fortran programs that demonstrate capabilities in:
   Using Arrays, Using Functions, Using Subroutines
   Using Format Statements, Reading and Writing Files.
7. Solve programming problems using the VAX symbolic debugging program.

III. TOPICS TO BE COVERED

This particular course is an extension of CET106 which introduces the student to VAX/VMS and programming. It follows where that particular course ends and covers in detail the following topics:

1. VAX/VMS Commands.
2. EVE editor.
3. Command Procedures.
4. Structured Programming and Problem solving techniques.
5. Arrays.
6. Functions and Subroutines.
7. Libraries.
8. File Input and Output.
9. Debugging Concepts and using the Symbolic Debugger.

IV. LEARNING ACTIVITIES / REQUIRED RESOURCES

The learning activities have been blocked in related topic areas. The sequence in which they will be delivered may not necessarily correspond to these blocks. However, we will attempt to cover all of activities by the end of the course.

LEARNING ACTIVITIES

BLOCK 1 USING THE VMS EVE EDITOR

Throughout this course we will use the EVE Editor to make the program coding and debugging easier.

At the end of this block the student will be able to use the EVE editor to do the following features:

1. General editing.
2. Cut and Paste.
3. Replace and Substitute.
4. Find.
5. Buffers.
6. Include Files.
7. Create Windows and move from Window to Window.

REQUIRED RESOURCES

Instructor's Handouts, Guidance, and Material covered in the class and Labs.

VMS USER"S GUIDE Chapter 4

IV. LEARNING ACTIVITIES / REQUIRED RESOURCES (Continued)

LEARNING ACTIVITIES

BLOCK 2 FORTRAN PROGRAMMING

Throughout this course the student will continue to strengthen their programming skills and problem solving.

At the end of this block the student will be able to:

1. Understand what ARRAYS are and when to use them.
2. Understand the difference between one dimensional and multi-dimensional arrays.
3. Write programs utilizing one and two dimensional arrays.
4. Understand what FUNCTIONS are and how to use them.
5. Understand what SUBROUTINES are and how to use them.
6. Understand what Libraries are and how to use them.
7. Appreciate how subroutines and Functions are essential to proper structured programming.
8. Write programs using functions and subroutines.

REQUIRED RESOURCES

Instructor's Handouts, Guidance, and Material covered in the class and Labs.

VAX FORTRAN Text Chapters 9 to 13

LEARNING ACTIVITIES

BLOCK 3 STRUCTURED APPROACH TO PROBLEM SOLVING

Throughout this course we will attempt to focus our energy on ensuring that we take the time to solve the problems in our mind and on paper prior to sitting down and coding. Experience has shown that a student who takes the time to really understand the problem and follows structured programming techniques saves time in the long run and becomes a better programmer.

At the end of this block the students will be able to:

1. Properly define the problem in his/her own words.
2. Describe what has to be done to solve the problem in English.
3. Understand what program design is and why it is important.
4. Describe and use the following structured programming tools and techniques:
   a) Pseudo Code
   b) Modular Code
   c) Peer Walk Through
5. Use the VAX symbolic debugging program to debug FORTRAN programs.
6. Manually debug and desk check code.
7. Develop larger and more complex programs.

REQUIRED RESOURCES

Instructor's Handouts, Guidance, and Material covered in the class and Labs.

VMS USER"S GUIDE Chapter 6

VAX FORTRAN Text Chapters 14 and 15

LEARNING ACTIVITIES

BLOCK 4 COMMAND PROCEDURES

Throughout this course the student will continue to strengthen their skills in using the VAX.

At the end of this block the student will be able to:

1. Discuss the concept of a command procedure, and relate it to the use of a LOGIN.COM file.
2. Understand the use of the logical names SYS$INPUT, SYS$OUTPUT, SYS$ERROR, and SYS$COMMAND.
3. Describe the form and use of the DCL commands such as the following:
   a) INQUIRE b) IF c) EXIT
   d) GOTO e) WRITE
4. Describe the ways of defining symbols in DCL, and the method of displaying symbols and logical names.
5. Define keys using the DEFINE/KEY command.
6. Assign logical names with the ASSIGN or DEFINE commands.
7. Understand and use the SET PROTECTION command to protect files and directories.
8. Write a login command procedure that creates a personal working environment, including a menu driven procedure that allows them to select the working environment.

REQUIRED RESOURCES

Instructor's Handouts, Guidance, and Material covered in the class and Labs.

VAX VMS USERS GUIDE Chapters 6 to 7 Appendix A.

VI. SPECIAL NOTES

1. Students with special needs are encouraged to discuss required accommodations confidentially with the instructor.

2. Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

VII. ASSESSMENT

Theory Tests, Practical Tests and Quizzes	60 %
Assignments	40 %

Some minor modifications to the above percentages may be necessary. The instructor reserves the right to adjust the mark up or down 5 % based on attendance, participation and whether there is an improving trend.

* All Assignments must be completed satisfactorily to complete this course. Late hand in penalties will be 5 % per day. Assignments will not be accepted past one week late unless there are extenuating and legitimate circumstances.

VII. ASSESSMENT (CONTINUED)

1. GRADING SCHEME

A+	90	-	100%	Outstanding achievement
A	80	-	89%	Excellent achievement
B	70	-	79%	Average Achievement
C	55	-	69%	Satisfactory Achievement

I Incomplete: Course work not complete at Mid-term. Only used at mid-term.

R Repeat

X A temporary grade that is limited to instances where special circumstances have prevented the student from completing objectives by the end of the semester. An X grade must be authorized by the Chairman. It reverts to an R if not upgraded in an agreed-upon time, less than 120 days.

Where a student's overall performance has been consistently unsatisfactory in the fifth semester, an R grade may be assigned without the option to continue on into the sixth semester of the course.