SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

Course Title: PROGRAMMING LANGUAGES

Code No.: CET 204

Program: COMPUTER ENGINEERING TECHNOLOGY

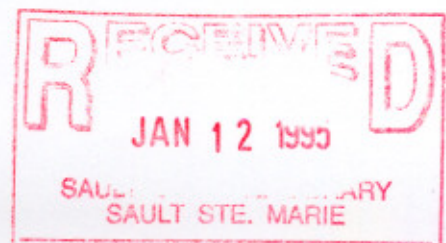**Semester:** FOURTH

Date: JANUARY 1995

Author: F. TURCO

Previous Outline Dated: JANUARY 1994

Approved: _~~signature~~_ **Date:** 95·01·10
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PROGRAMMING LANGUAGES   **CET204**

COURSE OUTLINE

PREREQUISITES: CET129
                               or Permission granted by the Instructor
                               Pending completion of this course.

TOTAL CREDITS: 5

I.   **PHILOSOPHY / GOALS:**

The goals of this course are to continue improving the
student's programming skills through the use of the COBOL
programming language. We will do a comparison study of the
similarities and differences in COBOL, FORTRAN and ASSEMBLER.
The student will continue to follow and improve structured
programming.   The course will take a relatively non-
mathematical approach but will include an in depth study of
programming techniques such as modularization, file handling,
error handling, string handling, table processing, and
formatted output. The students will utilize a variety of VMS
development tools such as EVE, the Debugger, and the
LIBRARIAN.

II.   **STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):**

Upon completion of this course the student will:

1.   Describe the fundamentals and various sections in a COBOL
      program such as:
            THE IDENTIFICATION DIVISION
            THE ENVIRONMENT DIVISION
            THE DATA DIVISION
            THE PROCEDURE DIVISION

2.   Use a variety of structured programming techniques such
      as debugging, subroutines and libraries.

3.   Demonstrate proficiency in file input, output and error
      handling in a variety of programs.

4.   Use array processing and string handling for a variety of
      programs.

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III. TOPICS TO BE COVERED:

TOPICS	APPROXIMATE TIME
1. LANGUAGE FUNDAMENTALS	4 Wks
2. STRUCTURED PROGRAMMING TECHNIQUES	2 Wks
3. FILE INPUT, OUTPUT, and ERROR HANDLING	6 Wks
4. ARRAY and STRING HANDLING	4 Wks

IV. LEARNING ACTIVITIES / REQUIRED RESOURCES

TOPIC 1   LANGUAGE FUNDAMENTALS

Languages in general have similarities in both structure and commands. There will be a comparison of how each language handles basic concepts such as defining data, program code, file handling, formatted output. Since the students have previous experience in FORTRAN, ASSEMBLER and C, the comparative study will evolve from that which they are accustomed to.

LEARNING ACTIVITIES:

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

1.   Illustrate the COBOL and FORTRAN approaches to:
      a)   Program Identification
      b)   Commenting
      c)   Data Definition
      d)   File Definition
      e)   Assignment of Data
      f)   Looping Control
      g)   Decision Making

2.   Write and develop programs in the COBOL environment.

RESOURCES:

TEXTBOOK: CHAPTERS 1,2,3,4,5,19

INSTRUCTOR'S HANDOUTS, GUIDANCE, and MATERIAL

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IV. LEARNING ACTIVITIES / REQUIRED RESOURCES (Continued)

TOPIC 2   STRUCTURED APPROACH TO PROBLEM SOLVING

Regardless of what language programs are written in, it is important that students prepare good habits when it comes to problem solving. A disciplined approach to problem solving can and will simplify the students effort. Several tools and techniques will be addressed.

LEARNING ACTIVITIES:

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

1. Describe and use the following structured programming tools and techniques:
    a) Plan of ATTACK
    b) Pseudocode
    c) Inspections and Walkthroughs

2. Provide thorough and useful program documentation.

3. Produce Modularized and structured code using programming features such as:
    a) Subroutines
    b) Functions
    c) Common Blocks of code
    d) Passing of Parameters
    e) Readable   code   by   proper   spacing   and indentation

4. Use the Library Facilities as well as Debugging.

RESOURCES:

INSTRUCTOR'S HANDOUTS, GUIDANCE, and MATERIAL

IV. LEARNING ACTIVITIES / REQUIRED RESOURCES (Continued)

TOPIC 3   FILE INPUT, OUTPUT AND ERROR HANDLING

This block will introduce the student to the various types of files on the VAX, and the typical ways of using them. The students will also learn to write error handlers to respond to run time errors.

LEARNING ACTIVITIES:

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

1. Format output using the variety of PICTURE clauses in COBOL.

2. Discuss the differences to the following types of file:
    a) Terminal Format
    b) Sequential
    c) Relative
    d) Indexed

3. Discuss the methods of performing typical file maintenance activities when using the various types of files such as:
    a) Add data records
    b) Modify records
    c) Delete records

4. Describe the methods of using error handlers to deal with run-time errors.

5. Write COBOL programs utilizing the various techniques described above.

RESOURCES:

TEXTBOOK: CHAPTERS 7,8 in detail
                   9, 13, 14, 15, 16, 17
                   (will be discussed but it will not be necessary to read in any detail)

INSTRUCTOR'S HANDOUTS, GUIDANCE, and MATERIAL

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IV. LEARNING ACTIVITIES / REQUIRED RESOURCES (Continued)

TOPIC 4   ARRAY AND STRING HANDLING

The students have previously been exposed to one and two
dimensional arrays as they are used in FORTRAN. They
will now use them in the COBOL language. String
manipulation is also a common programming required and
will be addressed.

LEARNING ACTIVITIES:

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

1. Discuss the concept of subscripted variables and
    the use of one and two dimensional arrays.

2. Discuss the common requirements of programs that
    process string data.

3. Write programs in COBOL that utilize array
    processing and string manipulation.

RESOURCES:

TEXTBOOK: CHAPTERS 10, 12, 18

INSTRUCTOR'S HANDOUTS, GUIDANCE, and MATERIAL

V. METHOD OF EVALUATION:

Theory Tests, Practical Tests and Quizzes   70%
Assignments   30%

The tentative breakdown is as follows:

4	FORMAL THEORY TESTS	AT 15 % EACH
2	QUIZZES	AT 5 % EACH
6	ASSIGNMENTS	AT 5 % EACH

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.

V.   METHOD OF EVALUATION (CONTINUED):

* - 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.

* - The instructor reserves the right to adjust the number of tests, practical tests and quizzes based on unforseen circumstances. The students will be given sufficient notice to any changes and the reason thereof.

GRADING SCHEME

1.   TESTS
Written tests will be conducted as deemed necessary; generally at the end of each block of work. They will be announced about one week in advance. Quizzes may be conducted without advance warning.

2.   ASSIGNMENTS
Assignments not completed by the assigned due-date will be penalized by 5% per day late. All assignments must be completed satisfactorily to complete the course.

3.   GRADING SCHEME

A+	90	-	100%	Outstanding achievement
A	80	-	89%	Excellent achievement
B	70	-	79%	Average Achievement
C	55	-	69%	Satisfactory Achievement
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 Chairperson. It reverts to an R if not upgraded in an agreed-upon time, less than 120 days.		

V.   METHOD OF EVALUATION (CONTINUED):

4.   UPGRADING OF INCOMPLETE

When a student's course work is incomplete or final grade is below 55%, there is the possibility of upgrading to a pass when the student's performance warrants it. Attendance and assignment completion will have a bearing on whether upgrading will be allowed. A failing grade on all tests will remove the option of any upgrading and an R grade will result. The highest grade on re-written tests or assignments will be 56%.

Where a student's overall performance has been consistently unsatisfactory, an R grade may be assigned without the option of make-up work.

The method of upgrading is at the discretion of the teacher and may consist of one or more of the following options: assigned make-up work, re-doing assignments, re-writing of tests, or writing a comprehensive supplemental examination.

VI.   PRIOR LEARNING ASSESSMENT

This course is not available for prior learning assessment at this time.

VII. REQUIRED STUDENT RESOURCES

TEXTBOOK:

1.   "COMPREHENSIVE STRUCTURED COBOL" - GARY S. HOPKIN
       FOURTH EDITION

Additional reference material will either be given to the students or placed in the library for the student's use.

Instructor's Handouts, Guidance, and Material as it relates to the individual topics.

Individual and Group Assignments to be formally prepared as assigned.

VIII.   ADDITIONAL RESOURCE MATERIAL

None required for this particular course.

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IX.   SPECIAL NOTES:

   1.   Students with special needs (eg. physical limitations,
        visual or learning impairments or learning disabilities)
        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
        or take advantage of different learning opportunities.

   3.   The topics will not necessarily be covered in the order
        shown in this course outline.

X.   COURSE ANALYSIS SHEET

   Not applicable for this course at this time.

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