SAULT COLLEGE OF APPLIED ARTS & TECHNOLOGY

SAULT STE. MARIE, ONTARIO

COURSE OUTLINE

COURSE TITLE: COBOL

CODE NO.: EDP 112 **SEMESTER:** THREE

PROGRAM: COMPUTER PROGRAMMER

AUTHOR: FRAN DEW

DATE: SEPTEMBER, 1995

PREVIOUS OUTLINE DATED:

New:_____ Revision: X

APPROVED:_____ _____

DEAN, SCHOOL OF BUSINESS & HOSPITALITY **DATE**

COBOL — **COURSE NAME**

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Total credit time: 90 hours

Prerequisites: EDP111, EDP318

I PHILOSOPHY/GOALS:

This course provides the student with an opportunity to develop practical data processing skills through structured programming. This course also provides an opportunity for the student to develop skills in using standard techniques for problem analysis through to final program testing. Emphasis is placed upon structured design, top-down developments, program constructs, pseudocode, structure charts, etc. These tools are applied to case studies.

II STUDENT PERFORMANCE OBJECTIVES:

Upon successful completion of this course, the student will be able to:

1. identify the origin, purpose and basic structure of a programming language
2. design structured programs
3. write high-level programs
4. maintain files
5. use advanced features including interactive processing
6. utilize COPY and CALL

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III TOPICS TO BE COVERED

1. Introduction
2. From Coding Form to Computer
3. A Methodology for Program Development
4. The Identification, Environment, and Data Divisions
5. The Procedure Division
6. Debugging
7. Editing and Coding Standards
8. Data Validation
9. More about the Procedure Division
10. Screen I-O
11. Introduction to Tables
12. Table Lookups
13. Multilevel Tables
14. Sorting
15. Control Breaks
16. Subprograms
17. Sequential File Maintenance

IV LEARNING OUTCOMES

1. Introduction
   Upon successful completion of this unit, the student will be able to
   a identify the four COBOL (Common Business Oriented Language) program divisions, which are Identification, Environment, Data and Procedure
   b discuss the six COBOL language elements consisting of reserved words, programmer-supplied names, literals, symbols, level numbers and pictures
   c explain the difference between numeric and nonnumeric literals, giving valid examples of each

   Reference: text Chapter One

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IV LEARNING OUTCOMES - Cont'd.

2. From Coding Form to Computer
   Upon successful completion of this unit, the student will be able to
   a code a program, into the proper columns
   b distinguish between compilation and execution of a program
   c describe differences between a PC and mainframe in execution of a COBOL program
   d compile, link and execute a COBOL program
   e find and correct simple errors in compilation or execution

   Reference: text Chapter Two

3. A Methodology for Program Development
   Upon successful completion of this unit, the student will be able to
   a describe development of a hierarchy chart
   b define structured programming
   c distinguish between a functionally oriented technique and a procedurally oriented technique
   d explain top down design and implementation

   Reference: text Chapter Three

4. The Identification, Environment, and Data Divisions
   Upon successful completion of this unit, the student will be able to
   a describe COBOL notation and determine the appropriate syntax for any statement
   b complete Identification and Environment Divisions
   c code Working-Storage Section entries
   d describe the use of the assumed (implied) decimal

   Reference: text Chapter Four

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IV LEARNING OUTCOMES – Cont'd.

5. The Procedure Division
   Upon successful completion of this unit, the student will be able to
   a demonstrate the use of OPEN, CLOSE, READ and WRITE statements
   b explain the use of the initial READ statement, and its placement in the program
   c discuss the READ, MOVE, PERFORM, IF..END-IF, EVALUATE, COMPUTE, ADD, SUBTRACT, MULTIPLY and DIVIDE statements
   d demonstrate the use of the ROUNDED and SIZE ERROR options
   e explain the connection between a hierarchy chart and resultant Procedure Division entries

   Reference: text Chapter Five

6. Debugging
   Upon successful completion of this unit, the student will be able to
   a describe the difference between compilation and execution errors
   b describe debugging techniques which are DISPLAY, cross-reference listing, interactive debugger and use of file status codes
   c make a structured walkthrough in a program

   Reference: text Chapter Six

7. Editing and Coding Standards
   Upon successful completion of this unit, the student will be able to
   a list the complete set of COBOL editing characters
   b describe and compare numeric and numeric-edited fields
   c describe the difference between actual and implied decimal points
   d describe the rules for signed numbers and the editing characters + - CR DB

   Reference: text Chapter Seven

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IV LEARNING OUTCOMES – Cont'd.

8. Data Validation
Upon successful completion of this unit, the student will be able to
   a describe the importance of data validation
   b define validity tests, and describe numeric test, alphabetic test, consistency check, sequence check, completeness check, date check and subscript check
   c describe conditions in an IF statement
   d describe the nested IF statement
   e compare the use of END-IF and NEXT STATEMENT

   Reference: text Chapter Eight

9. More about the Procedure Division
Upon successful completion of this unit, the student will be able to
   a differentiate between DO WHILE and DO UNTIL structures
   b define in-line PERFORM and a false-condition branch
   c differentiate between a paragraph and a section
   d demonstrate the use of READ INTO, WRITE FROM, INITIALIZE, INSPECT, STRING, UNSTRING and MOVE CORRESPONDING statements

   Reference: text Chapter Nine

10. Screen I-O
Upon successful completion of this unit, the student will be able to
   a discuss differences between screen I-O (Input-Output) and file-oriented I-O
   b describe the ACCEPT and DISPLAY statements
   c describe the SCREEN SECTION
   d utilize a colour scheme for I-O
   e compare data validation between screen and batch procedures

   Reference: text Chapter Ten

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IV LEARNING OUTCOMES – Cont'd.

11. Introduction to Tables
Upon successful completion of this unit, the student will be able to
   a define a table and its use
   b explain the use of the OCCURS clause to implement a table
   c demonstrate the use of the PERFORM VARYING statement
   d distinguish between fixed and variable length records
   e explain the use of OCCURS DEPENDING ON clause, as well as the USAGE clause

   Reference: text Chapter Eleven

12. Table Lookups
Upon successful completion of this unit, the student will be able to
   a describe the use of a table lookup
   b distinguish among numeric, alphabetic and alphanumeric codes
   c distinguish among a sequential table lookup, a binary table lookup and direct access to table entries
   d state the purpose of the VALUE, OCCURS and REDEFINES clauses in table definition and initialization
   e define a range-step table
   f explain and code SEARCH and SEARCH ALL statements to implement table lookups

   Reference: text Chapter Twelve

13. Multilevel Tables
Upon successful completion of this unit, the student will be able to
   a define and initialize one-, two- and three-level tables
   b differentiate between VALUE, OCCURS and REDEFINES clauses as they relate to table definition and initialization
   c process tables in one, two and three dimensions
   d explain the use of the VARYING option of the SEARCH statement
   e nest SEARCH statements within one another for multilevel-table lookups

   Reference: text Chapter Thirteen

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IV LEARNING OUTCOMES - Cont'd.

14. Sorting
Upon successful completion of this unit, the student will be able to
   a distinguish among an internal sort, a utility sort, and the COBOL SORT statement
   b differentiate between an ascending and descending sort, between major, intermediate and minor keys, and between primary, secondary and tertiary keys
   c define collating sequence and the differences between EBCDIC (Extended Binary Coded Decimal Interchange Code) and ASCII (American Standard Code for Information Interchange)
   d explain SORT, RELEASE, RETURN and SD statements
   e compare a merge with a sort

   Reference: text Chapter Fourteen

15. Control Breaks
Upon successful completion of this unit, the student will be able to
   a define control break, and distinguish between a single control break and a multilevel control break
   b explain the relationship between sorting and control breaks
   c implement a general purpose algorithm to write a COBOL program for any number of control breaks
   d utilize one-, two- and three-level control breaks
   e distinguish between rolling and running totals

   Reference: text Chapter Fifteen

16. Subprograms
Upon successful completion of this unit, the student will be able to
   a define a subprogram and describe its implementation in COBOL
   b explain the COPY statement, as well as the BY CONTENT and BY REFERENCE clauses
   c describe the purpose of the linkage-editor

   Reference: text Chapter Sixteen

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IV LEARNING OUTCOMES - Cont'd.

17. Sequential File Maintenance
    Upon successful completion of this unit, the student will be able to
    a define file maintenance, distinguishing among the old master, transaction and new master files
    b describe at least three types of errors that can be detected in a stand-alone edit program
    c list two errors that cannot be detected in a stand-alone edit program
    d discuss the balance line algorithm

V EVALUATION METHODS

Tests (3 @ 24%)	72%
Assignments (7 @ 4%)	28%
	100%

Assignments received after the due dates are subject to a zero mark.

Grading:

A+	90 and over
A	80 and over
B	70 and over
C	60 and over
R	under 60

VI REQUIRED STUDENT RESOURCES

Text: "COBOL from Micro to Mainframe"
by Grauer and Villar
second edition
available in the Campus Bookstore

Other References: VAX COBOL Volume 1 User Manual
VAX COBOL Volume 2 Reference Manual
available in Software Support

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VII SPECIAL NOTES

Tests may contain both written and practical on-line components.

Students with special needs, such as physical limitations, visual impairments, hearing impairments, or learning disabilities, are encouraged to discuss required accommodations, confidentially, with the instructor.

Your instructor reserves the right to modify the course as is deemed necessary to meet the needs of students.