# COBOL Essentials

# Course Summary

**Description**

This course begins with an overview of COBOL, learning some of the basic language features. Students will then write a simple program. As COBOL becomes more familiar, the important issue of Structured COBOL Programming is addressed. Students are encouraged to use these structured techniques as they code additional programs, and all solutions to the exercises will be structured solutions. As the course progresses, students will spend the majority of each day in workshop, with minimal lectures to introduce new topics and then immediately apply them hands-on. When finished, each student will have a good grasp of the essentials of COBOL.

**Objectives**
At the end of this course, students will be able to:

- Chiefly, learn to program effectively in the COBOL language.
- Understand Structured COBOL and how to implement and update Structured COBOL systems
- Implement COBOL programs in a batch environment, usually (but not exclusively) IBM mainframe
- Write COBOL programs that perform calculations and produce readable reports
- Write COBOL programs that call or are called by other programs
- Test and debug COBOL programs

**Audience**

This course is for students desiring a basic understanding of COBOL programs and ability to code, change, test and debug COBOL programs.

**Prerequisites**

Students must have a basic understanding of the computing environment and skills with an integrated development environment (e.g. TSO/ISPF on an IBM mainframe, MicroFocus COBOL, Rational Developer for System z) with three months experience recommended.

**Duration**

Five days

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*... to Your Success!"*

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## Course Outline

**I. Chapter 1**
- A. Why COBOL?
- B. History, Advantages, Disadvantages
- C. Sample HELLO Program
- D. Documentation
- E. Numbering Systems
- F. Decimal, Binary, and Hexadecimal Table
- G. Summary & Chapter Review

**II. Chapter 2**
- A. What is COBOL?
- B. The Onward March of COBOL
- C. COBOL Advantages and Limitations
- D. Research Support
- E. COBOL Preparation Steps
- F. COBOL Structure
- G. COBOL Columns and Margins
- H. COBOL Syntax
- I. Summary & Chapter Review
- J. Exercise

**III. Chapter 3**
- A. COBOL Definition
- B. Identification Division
- C. Environment Division
- D. Data Division
- E. Variable Length Records
- F. Describing Data
- G. Level Numbers
- H. PICTURE Clause
- I. USAGE Clause
- J. USAGE DISPLAY
- K. USAGE COMP-3
- L. USAGE COMP
- M. VALUE Clause
- N. VALUE Clause Components
- O. Group and Elementary Item
- P. COPY Statement
- Q. Switches
- R. Compiling Programs
- S. Compiler JCL
- T. Compiler Error Types
- U. Summary & Chapter Review
- V. Exercise

**IV. Chapter 4**
- A. Simple Procedures
- B. Procedure Division
- C. Statements and Sentences
- D. Scope Terminators
- E. Paragraphs
- F. Sections
- G. Structure of a COBOL Program
- H. Initialize
- I. Input / Output Statements
- J. OPEN
- K. CLOSE
- L. READ
- M. WRITE
- N. ACCEPT
- O. ACCEPT DAY-OF-WEEK
- P. CURRENT-DATE FUNCTION
- Q. CURRENT-DATE EXAMPLES
- R. DISPLAY
- S. MOVE statement: categories, types, examples
- T. Reference Modification
- U. GOBACK
- V. STOP RUN
- W. RETURN-CODE
- X. Sample COBOL Program
- Y. Linkage Editor
- Z. Summary and Chapter Review
- AA. Exercise

**V. Chapter 5**
- A. Editing and Branching
- B. GO TO
- C. EXIT
- D. PERFORM, PERFORM Times, PERFORM THRU
- E. PERFORM UNTIL WITH TEST BEFORE
- F. PERFORM UNTIL WITH TEST AFTER
- G. Inline PERFORM
- H. IF THEN ELSE
- I. Condition Names
- J. SET TO TRUE
- K. Class Condition
- L. Sign Condition
- M. Relation Condition

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## Course Outline (cont'd)

N. Condition-Name Condition
O. Compound and Negated IF THEN ELSE
P. Truth Tables
Q. EVALUATE
R. Summary and Chapter Review
S. Exercise

**VI. Chapter 6**

A. Testing and Debugging COBOL Programs
B. Testing Strategies
C. Standard Compiler Listing
D. Expanded Compiler Listing
E. Usefulness of listings w/Abends
F. Abend Solving Methodology
G. System Abends
H. Common System Abend Codes
I. Common User Abend Codes
J. Deliberately Abending a Program
K. Abridged S0C7
L. Summary and Chapter Review
M. Exercise

**VII. Chapter 7**

A. Structured COBOL
B. Advantages of Structured COBOL
C. Elements of Structured COBOL
D. Sequence Structure
E. Selection Structure
F. Case Structure
G. Iteration Structure
H. Elements of Readability
I. Examples of Readability
J. Summary and Chapter Review

**VIII. Chapter 8**

A. COBOL Reports
B. Report Definition
C. Report Types
D. Report and Control Break Processing
E. Report Components
F. Report Preparation
G. Switches
H. Counters
I. Data Editing: Blank, Comma, Period, $, Minus, Plus, Credits & Debits
J. Data Editing: Suppressing, Protecting, Floating
K. INSPECT
L. STRING
M. UNSTRING
N. REDEFINES
O. Paper Positioning
P. Summary and Chapter Review
Q. Exercise

**IX. Chapter 9**

A. COBOL Arithmetic
B. ADD
C. SUBTRACT
D. MULTIPLY
E. DIVIDE
F. COMPUTE
G. Summary and Chapter Review
H. Exercise

**X. Chapter 10**

A. Calling Other Programs
B. CALL Syntax , CALL, and Statement
C. Basic CALL w/Parameter Pass
D. CALL BY REFERENCE
E. CALL BY CONTENT
F. Combination CALL
G. CALL BY VALUE
H. ON EXCEPTION, OVERFLOW
I. Static and Dynamic
J. Static Link Example
K. Dynamic Link Example
L. PARM Passing
M. Summary and Chapter Review
N. Exercise

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## Course Outline (cont'd)

**XI. Appendix 1**
- A. Intrinsic Functions
- B. What is an intrinsic function?
- C. How do I use an intrinsic function?
- D. Coding an intrinsic function
- E. Coding rules
- F. Function Identifiers
- G. Examples
- H. The ALL Subscript
- I. Intrinsic Function List
- J. Review1

**XII. Appendix 2**
- A. Common System Abend Codes
- B. S001
- C. S013
- D. S0Cn
- E. S0C1
- F. S0C4
- G. S0C7
- H. S213
- I. S913
- J. SB37
- K. SD37
- L. SE37
- M. S706
- N. S806

**XIII. Appendix 3**
- A. File Status Codes

**XIV. Appendix 4**
- A. Structured Programming
- B. Sequence Structure
- C. Selection Structure
- D. Case Structure
- E. Iteration Structure
- F. Top-Down Design/Top-Down Programming
- G. Hierarchy Example
- H. Workshop

**XV. Appendix 5**
- A. Program Development Steps
- B. Understand the Problem
- C. Program Specifications
- D. Design / Testing Tools
- E. System Flowchart/System Diagram and Example
- F. Structure/Hierarchy Chart
- G. Program Flowchart
- H. Program Flowchart Symbols
- I. Task Analysis/Pseudo Code
- J. Test Plan