

## **CIT 148—Visual BASIC I (3)**

### Course Description

Students design, code, test, and execute programs on this Level I programming language. Topics also include menus, dialogue boxes, child window controls (push buttons, radio buttons), the graphical user interface, mouse input, fonts, and printing. Lecture: 3 hours. Prerequisites: none

### Course Competencies

Upon successful completion of this course, the student can:

1. Describe each of the steps in the systems development life cycle;
2. Demonstrate a basic knowledge of Microsoft Windows
3. Demonstrate an understanding of the object-oriented features of Windows
4. Code programs involving:
  - a. Mouse input areas such as dialogue boxes, input controls, combo boxes, push buttons, and check buttons;
  - b. Event procedures;
  - c. Graphic controls and graphic methods
  - d. File operations such as Save, Open, and Print.

### Course Outline

- I. Running a Visual Basic Program
  - A. Learning How Visual Basic Differs from Other Programming Languages
  - B. Understanding the Relationship of Visual Basic to Microsoft Windows
  - C. Understanding Objects as Instances of Classes
  - D. Running Simple Visual Basic Programs
- II. Writing and Running A First Visual Basic
  - A. Understanding the Concept of a Visual Basic Project
  - B. Learning How to Manage Visual Basic Projects
  - C. Opening the Properties Window and Changing Form Properties
  - D. Opening the Code Window and Writing Visual Basic Instructions
  - E. Producing a Compiled Application from a Standard EXE Project
- III. Adding Controls and Event Procedures to Form Modules
  - A. Understanding Standard Toolbox Control Objects
  - B. Adding a Control to a Form and Setting Its Properties
  - C. Coding an Event Procedure for a Control
  - D. Changing Object Properties with Coded Statements
- IV. Learning to Think Visually
  - A. Thinking About a Problem
  - B. Using Design Time and Runtime Properties to Manipulate List Boxes and Combo

## Boxes

- C. Using Frame Controls to Improve User-Interface Design
  - D. Controlling the Tab Order in a Design
  - E. Learning to Enable and Disable a Control
  - F. Creating a Menu Bar and Writing Code for Menu Procedures
  - G. Adding a Scroll Bar to a Design
- V. Introduction to the Graphic Controls and Graphic Methods of Visual Basic
- A. Learning the Basics of the Visual Basic Coordinate System
  - B. Manipulating the Line and Shape Controls in Design Time and Runtime
  - C. Layering Controls in Design Time and Runtime
  - D. Using the Design Time and Runtime Properties of the Image Control
  - E. Introducing the Visual Basic Graphic Methods
- VI. Variables and Constants
- A. Learning the Difference Between a Variable and a Constant
  - B. Declaring a Variable Using a Data Type
  - C. Declaring Using the Five Types of Numeric Variables
  - D. Working with Fixed- and Variable-Length String Variables
  - E. Using Functions for Testing Variables, Including Type Variant
  - F. Declaring and Using Variables of Type Date
- VII. Math Operators and Formulas
- A. Understanding the Seven Arithmetic Operators
  - B. Writing Arithmetic Expressions Using Arithmetic Operators
  - C. Understanding the Unary and Assignment Operators
  - D. Converting Strings to Numbers and Numbers to Strings
- VIII. If...Then...Else Logic and Select Case Statement
- A. Understanding the Relational Operators
  - B. Knowing the Different Forms of the If...Then...Else Syntax
  - C. Understanding the Logical Operators
  - D. Understanding and Using the Select Case Syntax
- IX. Inputting Values and Formatting Output
- A. Understanding the Uses of an Input Box
  - B. Understanding the Uses of a Message Box
  - C. Learning How to Add a Pop-Up Menu
  - D. Learning How to Format Numbers, Dates, and Time
  - E. Understanding the PrintForm Method
- X. Defining the Scope of Variables and Procedures
- A. Understanding the Difference in Scope Among Local, Module, and Global Variables
  - B. Understanding Static Scope
  - C. Understanding Scoping Procedures

- D. Working with Multiple Forms in an Application
- E. Declaring a User-Defined Data Type

XI. Working with Loops

- A. Understanding the For-Next Loop Syntax
- B. Using a Control Array in a Program
- C. Understanding How Do Loops Work
- D. Understanding How While-Wend Loops Work
- E. Adding the Timer Control to a Project

XII. Class Modules

- A. Reviewing Object Features
- B. Adding a Class Module to a Project
- C. Adding Objects to a Collection

XIII. Programming User Events

- A. Understanding KeyPress(), KeyUp(), and KeyDown() Events
- B. Working with Mouse Events
- C. Understanding Drag() and DragDrop() Events

XIV. Introduction to Debugging

- A. Understanding the Different Types of Programming Errors
- B. Working with Visual Basic's Third Mode: Break
- C. Working with Watch Expressions
- D. Understanding the Debug Object and Its Print Method

XV. Lists and Arrays

- A. Selecting Elements from a List Box
- B. Selecting an Element from a Combo Box
- C. Understanding One-Dimensional Variable Arrays
- D. Using Multidimensional Arrays, Tables, Arrays of User-Defined Types, and the MSFlexGrid Control

XVI. File Processing Controls and Sequential File Processing

- A. Using Built-in Visual Basic File-Processing Controls
- B. Understanding the Purpose of the App Object
- C. Adding Error-Handling Procedures to File Processing
- D. Understanding Design Concepts of Sequential File Records
- E. Writing, Reading, or Appending to a Sequential File