



# Microsoft® Office Excel® 2016: VBA (Macros)

Course length: 2.0 day(s)

## Course Description

**Course Objective:** You will automate your job tasks in Microsoft® Office Excel® 2016.

**Target Student:** This course is intended for advanced Microsoft Excel professionals that need to automate Excel spreadsheet tasks using Visual Basic for Applications (VBA).

**Prerequisites:** Knowledge of the basics of Excel, including how to create, edit, format, and print worksheets that include charts and sorted and filtered data. Students are recommended to first take the following Logical Operations courses or have equivalent knowledge:

- Microsoft® Office Excel® 2016: Level 1
- Microsoft® Office Excel® 2016: Level 2
- Microsoft® Office Excel® 2016: Level 3

## Course Content

### **LESSON ONE: INTRODUCTION TO VISUAL BASIC FOR APPLICATIONS (VBA)**

WHAT IS VISUAL BASIC FOR APPLICATIONS (VBA)?

OBJECT-ORIENTED PROGRAMMING

PROCEDURES:

OBJECTS

CONTAINERS

COLLECTIONS

PROPERTIES:

METHODS:

EVENTS:

HOW VBA REFERS TO OBJECTS

ACCESSING THE MACRO COMMANDS

SECURITY SETTINGS

SAVING WORKBOOKS THAT CONTAIN MACROS

### **LESSON TWO: UNDERSTANDING MACROS**

WRITING CODE VS RECORDING MACROS

ABSOLUTE VS RELATIVE REFERENCING

USING THE MACRO RECORDER

RECORDING IN RELATIVE MODE

MODIFYING MACROS

METHODS FOR EXECUTING MACROS

ACCESSING MACROS THROUGH THE QUICK ACCESS

TOOLBAR

ACCESSING MACROS THROUGH THE RIBBON

ACCESSING MACROS THROUGH SHAPES OR IMAGES

ACCESSING MACROS THROUGH CONTROLS

### **LESSON THREE: GETTING TO KNOW THE VISUAL BASIC EDITOR (VBE)**

THE MICROSOFT VISUAL BASIC EDITOR

THE PROJECT EXPLORER

THE PROPERTIES WINDOW

THE CODE WINDOW

ADDING A NEW MODULE

NAMING MODULES

REMOVING A MODULE

EXPORTING AND IMPORTING MODULES

PROTECTING CODE

THE OBJECT BROWSER

CUSTOMIZING THE VISUAL BASIC ENVIRONMENT

*The Editor Tab*

*Code Settings*

*Window Setting*

*The Editor Format Tab*

*The General Tab*

*The Docking Tab*

DOCKING WINDOWS

### **LESSON FOUR: TROUBLESHOOTING AND DEBUGGING ERRORS**

TROUBLESHOOTING AND DEBUGGING ERRORS

TYPES OF ERRORS

*Syntax Errors (aka Compile Error)*

*Run-Time Errors*

*Logical Errors*

DEBUGGING TECHNIQUES

*Debugging Tools*

*Setting a Breakpoint*

*The Watch Window*

*Stepping Through Code*

*Deleting a Watch Expression*

*The Immediate Window*

*The Locals Window*

### **LESSON FIVE: WRITING VBA CODE**

ESSENTIALS TO WRITING VBA CODE

*Sub Procedures vs Functions*

*Macro Naming Rules*

*Comments*

SUB PROCEDURES

*Using Objects*

*Using Methods*

*Using Events*

*Storing Procedures in the Personal Macro Workbook*

*Copy and Paste Procedures*

*Assigning Macro Buttons to the Quick*

*Access Toolbar (QAT)*

CALLING A SUB PROCEDURE

EXPRESSIONS

VARIABLES

*Declaring a Variable*

*Option Explicit*

*Declaring Multiple Variables*

*Assigning a Value to a Variable*

DATA TYPES

*Using Byte Variables*

*Using String Variables*

*Using Currency Variables*

*Using Date Variables*

VARIANTS

CONSTANTS

SCOPE

*Procedure Level Scope*

*Private Level Scope*

*Public Level Scope*

VBA STANDARD OPERATORS

*The Assignment Operator ( = )*

*The Line Continuation Character ( \_ )*

*The Parenthesis ( )*

*The Comma ( , )*

*The Colon Operator ( : )*

*The Ampersand ( & )*

*Carriage Return Line Feed (vbCrLf)*

*Defining Parameters (:=)*

*Arithmetic Operators Comparison Operators*

*Logical Operators*

THE CELLS OBJECT

*The Value Property*

FORMATTING DATA

*The Range Object*

*The Select Method*

*The CurrentRegion Property*

*The RangeSort Method*

MANIPULATING WORKSHEET DATA

*The ActiveSheet Property*

*The Name Property*

*The Selection Property*

*The Copy Method*

*The Paste Method*

*The Offset Property*

*The End Property*

*The Font Property*

*The With End With Construct*

*The Call Statement*

*The Columns and Rows Properties*

*The AutoFit Method*

ARRAYS

## **LESSON SIX: WORKING WITH CONTROL STRUCTURES**

CONTROL STRUCTURES

*Decision Structures*

*If...Then*

*If...Then...Else*

*Select Case*

LOOPS

*For Next Loop*

*Stepping*

*For Each*

*Do Until Loop*

*Do While Loop*

## **LESSON SEVEN: WORKING WITH FUNCTION PROCEDURES**

FUNCTIONS

*Creating a Function*

*MacroOptions Method*

*Calling a Function*

*Calling a Function in a Worksheet*

WRITE DATA TO TEXT FILES

USER INTERACTION FUNCTIONS

*Working with Message Boxes*

*Working with Input Boxes*

*Return Values*

## **LESSON EIGHT: ERROR HANDLING**

ERROR HANDLING

*The Error GoTo Statement*

*The On Error Resume Next*

*The Error Object*

## **LESSON NINE: USER FORMS**

### USER FORMS

*Displaying a UserForm*

*Printing a Form*

*Hiding a Form*

*Closing a Form*

### FORM PROPERTIES

*Name*

*Location*

*Size*

### CONTROLS

*Aligning Controls*

*Tab Order*

*Borders*

*Font*

*Control Colors*

*Control Visibility*

*Control Availability*

*Focus*

*Creating a User Form*

*Writing Code to Show the User Form*

*Event Procedures for UserForm Controls*

*Attaching Events to the Form Controls*

*Dependent Combo Boxes*

## **LESSON TEN: MANAGING SHEETS**

### MANIPULATING WORKSHEETS

*Sheet Types*

*Worksheet Reference Options*

*The Add Method*

*The Delete Method*

*The Copy Method*

*The Move Method*

### CREATING A CHART SHEET

*The Declared Range Object*

*The Set Statement*

## **REFERENCE**

### GLOSSARY

### VISUAL BASIC LANGUAGE KEYWORDS

*Reserved Keywords*

*Unreserved Keywords*

### OBJECT NAMING CONVENTIONS

### CODE SNIPPETS

### COMMON EXCEL VBA STATEMENTS

### EXCEL VBA FUNCTIONS

### VBA KEYBOARD SHORTCUTS