



Object Oriented Programming with Visual Basic 2015 Level 1

Course ISI-1475 - Five Days - Instructor-led - Hands on

Introduction

This course is designed to teach programmers how to build business applications with Visual Basic 2015. It is appropriate to those who are new to Visual Basic development environment or if you're upgrading to Visual Basic 2015.

Visual Basic.NET is a mature product. So the basics of developing Windows applications using VB and Visual Studio haven't changed. This course focuses on how to develop professional Windows Forms applications with Visual Basic. But along the way, it teaches you the Visual Basic language and core skills that you'll use to develop any Visual Basic application...whether for Windows, the web, or mobile devices.

At Course Completion

After completing this course, students will be able to understand all the new language features that make Visual Basic such as outstanding development tool:

- It shows you how to get the most from Visual Studio 2015 as you design, code, debug, and deploy Windows Forms applications using VB 2015.
- It gives you solid training in the essential skills that you'll use every day, including data validation...handling numeric, date, and string data...working with arrays and collections...handling exceptions...working with text, binary, and XML files...and understanding how OOP works.
- It gives you training on database programming.
- It introduces you to Live Code Analysis, CodeLens, interpolated strings, the null-conditional operator and multi-line string literals. INQ, the .NET feature lets you use VB to query almost any data source, from databases to arrays to XML files and lambda expressions.
- It shows you how to build real-world applications so you always see how the features you're learning interact with each other.

Prerequisites

This course is appropriate for students who have programming experience with another language like Java, C++ or COBOL, as well as those who are new to Visual Basic development

Student Materials

The student kit includes a workbook and other necessary materials for this class.

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Course Outline

Introduction to Visual Basic Programming

Module 1: How to get started with Visual Studio

- An introduction to .NET development
 - .NET applications
 - Visual Studio and the .NET programming languages
 - The .NET Framework
 - The Visual Studio IDE
 - How a Visual Basic application is compiled and run
 - How Visual Basic differs from the other .NET languages
- A tour of the Visual Studio IDE
 - How to start Visual Studio
 - How to open or close an existing project
 - Some possible menu variations
 - How to use the Form Designer
 - How to use the Code Editor
 - How to use the Solution Explorer
 - How to work with Visual Studio's windows
- How to test a project
 - How to build a project
 - How to run a project
- How to upgrade projects and change .NET Framework versions
 - How to upgrade projects created in earlier versions of Visual Basic .NET
 - How to change the .NET Framework version used by a project

Module 2: How to design a Windows Forms application

- How to set options and create a new project
 - How to set the Visual Studio options
 - How to change the environment settings
 - How to create a new project
- How to design a form
 - The design of the Invoice Total form
 - How to add controls to a form
 - How to set properties
 - Common properties for forms and controls
 - How to add navigation features
 - The property settings for the Invoice Total form
 - How to use Document Outline view
- How to name and save the files of a project
 - How to name the files of a project
 - How to save the files of a project

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Module 3: How to code and test a Windows Forms application

- An introduction to coding
 - Introduction to object-oriented programming
 - How to refer to properties, methods, and events
 - How an application responds to events
- How to add code to a form
 - How to create an event handler for the default event of a form or control
 - How IntelliSense helps you enter the code for a form
 - Coding rules for Visual Basic statements
 - The event handlers for the Invoice Total form
 - How to code with a readable style
 - How to code comments
 - How to detect and correct syntax errors
- Other skills for working with code
 - How to use the toolbar buttons
 - How to collapse or expand code
 - How to zoom in and out
 - How to print the source code
 - How to code snippets
 - How to refactor code
 - How perform quick actions with light bulbs
 - How to use the annotations in the scroll bar
 - How to use the M feature
 - How to get help information
- How to run, test, and debug a project
 - How to run a project
 - How to test a project
 - How to debug runtime errors

Module 4: How to work with numeric and string data

- How to work with the built-in value types
 - The built-in value types
 - How to declare and initialize variables
 - How to declare and initialize constants
 - How to code arithmetic expressions
 - How to code assignment statements
 - How to work with the order of precedence
 - How to use casting
 - How to change the type semantics
 - How to use the Math class
- How to work with strings
 - How to declare and initialize a string
 - How to join and append strings
- How to convert data types
 - The .NET structures and classes that define data types
 - How to use Visual Basic functions to convert data types

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- How to use methods of the .NET data structures to convert data types
- How to use methods of the Convert class to convert data types
- How to use three of the formatting functions
- How to use methods to convert numbers to formatted strings
- Three other skills for working with data
 - How to work with scope
 - How to declare and use enumerations
 - How to work with nullable types
- Two versions of the Invoice Total application
 - The basic Invoice Total application
 - The enhanced Invoice Total application

Module 5: How to code control structures

- How to code Boolean expressions
 - How to use the relational operators
 - How to use the logical operators
- How to code conditional statements
 - How to code If statements
 - How to code Select Case statements
 - An enhanced version of the Invoice Total application
- How to code loops
 - How to code For loops
 - How to code Do loops
 - How to use Exit and Continue statements
 - Debugging techniques for programs with loops
- The Future Value application
 - The design and property settings for the form
 - The code for the form

Module 6: How to code procedures and event handlers

- How to code and call procedures
 - How to code Sub procedures
 - How to call Sub procedures
 - When and how to pass arguments by reference and by value
 - How to code and call Function procedures
 - How to use optional parameters
 - How to use refactoring to create a new procedure and its calling statement
- How to work with events
 - How to start an event handler for any event
 - How to handle multiple events with one event handler
 - How to use the Code Editor to start an event handler
 - How to add and remove event wiring
- Another version of the Future Value application
 - The Function procedure
 - The event handlers



Module 7: How to handle exceptions and validate data

- An introduction to data validation and exception handling
 - How to use the `isNumeric` function for data validation
 - How to display a dialog box for error messages
 - How exception handling works
- How to use structured exception handling
 - How to catch an exception
 - How to use the properties and methods of an exception
 - How to catch specific types of exceptions
 - How to throw an exception
 - The Future Value application with exception handling
- How to validate data
 - How to validate a single entry
 - How to use generic procedures to validate an entry
 - How to validate multiple entries
- The Future Value application with data validation
 - The dialog boxes
 - The code
- Two other ways to validate data
 - How to use the Validating event
 - How to use the masked text box

Module 8: How to work with arrays and collections

- How to work with one-dimensional arrays
 - How to create an array
 - How to assign values to the elements of an array
 - How to use For loops to work with arrays
 - How to use For loops to work with arrays
 - How to use For Each loops to work with arrays
- How to work with rectangular arrays
 - How to create a rectangular array
 - How to assign values to a rectangular array
 - How to work with rectangular arrays
- How to work with jagged arrays
 - How to create a jagged array
 - How to assign values to a jagged array
 - How to work with jagged arrays
- More skills for working with arrays
 - How to use the Array class
 - How to refer to, copy, and resize arrays
 - How to code procedures that work with arrays
 - How to use the null-conditional operator
- How to work with collections
 - Commonly used collection classes
 - Typed vs. untyped collections
 - How to work with a list
 - How to work with a sorted list
 - How to work with queues and stacks
 - How to work with an array list

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Module 9: How to work with dates and strings

- How to work with dates and times
 - How to create a DateTime value
 - How to get the current date and time
 - How to format DateTime values
 - How to get information about dates and times
 - How to perform operations on dates and times
 - How to use Visual Basic properties and functions to work with dates and times
- How to work with strings
 - The properties and methods of the String class
 - Code examples that work with strings
 - More examples that work with strings
 - How to use the Parse and TryParse methods to validate numeric entries
 - How to use the StringBuilder class
 - How to use the Visual Basic functions to work with strings
- How to format numbers, dates, and times
 - How to format numbers
 - How to format dates and times
 - How to use interpolated strings

Module 10: More skills for working with Windows Forms and Controls

- How to work with controls
 - Five more types of controls
 - How to work with combo boxes and list boxes
 - How to work with check boxes and radio buttons
 - How to work with group boxes
 - How to use Tab Order view to set the tab order
 - How to get the information you need for using a control
- How to work with multi-form projects
 - How to add a form to a project
 - How to rename a form
 - How to change the startup form for a project
 - How to display a form as a dialog box
 - How to pass data between a form and a custom dialog box
- How to use the MessageBox class
 - How to display a dialog box and get the user response
 - How to use the FormClosing event
- The Payment application
 - The operation
 - The property settings
 - The code for the Customer form
 - The code for the Payment form



Module 11: How to create and use Classes

- An introduction to classes
 - How classes can be used to structure an application
 - The members you can define within a class
 - The code for the Product class
 - How instantiation works
- How to create a class
 - How to add a class file to a project
 - How to code fields
 - How to code standard properties
 - How to code auto-implemented properties
 - How to code methods
 - How to code constructors
 - How to code shared members
 - How to generate code stubs
- The Product Maintenance application
 - The operation of the Product Maintenance application
 - The classes used by the Product Maintenance application
 - The code for the Product Maintenance application
- How to browse, diagram and display and edit classes
 - How to browse the classes in a solution
 - How to use class diagrams and the Class Details window
 - How to use the Peek Definition windows
- How to work with structures
 - How to create a structure
 - How to use a structure

Module 12: How to Debug an Application

- Basic debugging techniques
 - How to set the debugging options
 - How to work in break mode
 - How to use the Edit and Continue feature
 - How to work with data tips
 - How to use breakpoints
 - How to control the execution of an application
- How to use the debugging windows
 - How to use the Locals window to monitor variables
 - How to use the Autos window to monitor variables
 - How to use Watch windows to monitor expressions
 - How to use the Immediate window to execute commands
 - How to use the Call Stack window to monitor called procedures
 - How to use the Call Hierarchy window to navigate through your code
 - How to use the Output or immediate window to get build or debugging information
 - How to use the Visualizer dialog boxes to view strings

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Module 13: An Introduction to Database Programming

- An introduction to client/server systems
 - The hardware components of a client/server system
 - The software components of a client/server system
- An introduction to relational databases
 - How a table is organized
 - How the tables in a database are related
 - How the columns in a table are defined
 - The design of the MMABooks database
- How to use SQL to work with a relational database
 - How to query a single table
 - How to join data from two or more tables
 - How to add, update, and delete data in a table
- An introduction to ADO.NET
 - The .NET data providers
 - How the basic ADO.NET components work
 - Concurrency and the disconnected data architecture
 - How a dataset is organized
 - How to work with data without using a data adapter
 - Two ways to create ADO.NET objects