Course 457:
Visual Basic 2008 Programming with Visual Studio
(5 days)

Course Description…

This course provides a solid foundation in the VB 9 language covering topics ranging from object oriented techniques to advanced .NET framework technologies. Key language features including object-oriented programming, generics, interfaces and LINQ are also discussed and applied to real-world situations. The course also provides a hands-on look at new and exciting Visual Studio 2008 features such as refactoring, debugging and code snippets and provides students with experience building data driven applications using ADO.NET and LINQ to SQL. Numerous hands-on labs and code samples are provided that give students practical experience they can take back to work and put to use immediately.

Learning Objectives…

- VB Language Fundamentals
- Object-oriented principles
- Visual Studio 2008 features
- The role of classes, objects, namespaces, and assemblies
- Generics, Interfaces and other key VB features
- .NET Base Class Library
- Components of the .NET framework
- ADO.NET and data access
- Language Integrated Query (LINQ)
- Working with Multiple Threads

Prerequisites…

Previous experience with a programming language such as Visual Basic, C++, or Java is highly recommended to get the most out of this course.

See next page for a detailed course outline…

Course Outline…

- **Section 1 – Building Applications with the .NET Framework**
  - What is the .NET Framework?
  - The role of the Common Language Runtime (CLR)
    - What is the CLR and what does it do in .NET?
    - .NET object-oriented language choices
    - Multi-language interoperability
    - Memory Management and Garbage Collection
  - .NET Compilation Model
    - Microsoft Intermediate Language (MSIL)
    - Just-in-Time compilation
    - Assemblies and Namespaces
  - The Base Class Library

- **Section 2 –VB Fundamentals**
  - VB Language Features
    - Compiled
    - Object-oriented
    - Threading support
    - Structured exception handling
    - Garbage collection
  - Features in VB 2008
    - Generics
    - Partial Types
    - My namespace
    - XML Comments
    - Anonymous Types
    - LINQ/Lambdas
  - Compiling VB applications
  - **Hands-on lab**: Creating your first VB Program

- **Section 3 –Visual Studio 2008**
  - .NET Development Tools
  - VS 2008 Editions
  - VS 2008 Features
    - Refactoring Support
    - Database and Query Designer
    - Integrated Web Publishing
    - Class Designer
    - Code Snippets
    - Debugger Visualizers
    - Edit and Continue
  - **Hands-on lab:** Exploring Visual Studio .NET 2005 Features

- **Section 4 – VB Language Syntax**
  - VB Basics
    - Writing statements
    - Commenting Code
    - XML Comments
    - Value vs. Reference Types
    - VB Operators
  - Defining Variables, Constants, and Arrays in VB
    - What is a variable?
    - Understanding variable scoping
    - Option Explicit and Option Strict
    - Declaring variables
    - Understanding Type Inference
    - Declaring constants
    - Declaring arrays
  - Conditionals and Looping
    - If…Else statements
    - IsNot keyword
    - If (boolean, value, value)
    - Select Case statements
    - Looping statements
  - **Hands-on lab:** Working with Arrays and Loops

- **Section 5 – Classes and Structs**
  - What are classes?
  - What are objects?
  - Class members
  - Creating a class from scratch
  - Setting class member access visibility
  - Adding constructors
  - Adding fields to a class
  - Adding property set and get statements to a class
  - Property indexers
  - Adding methods to a class
    - Sub Vs. Function
    - Method parameters (ByVal and ByRef)
    - Allowing for optional parameters
    - Using the ParamArray keyword
    - Shared methods
    - Calling methods
  - The Role of Namespaces
  - What is a Structure?
  - Differences between classes and structures
  - Creating a class in VS 2008 with the Class Designer
  - **Hands-on lab**: Creating a VB class with members
    Creating a VB class using the VS 2008 Class Designer

- **Section 6 –Object-Oriented Programming**
  - What is object-oriented programming?
  - The role of System.Object in .NET
  - Understanding Abstraction, Encapsulation, Polymorphism and Inheritance
  - Using abstract classes
  - Method overloading and overriding
  - Shadowing
  - Understanding boxing and unboxing in .NET
  - Operator Overloading
  - Using .NET Attributes
  - Structured Exception handling
    - Error handling in VB
    - Exception objects
    - Using Try…Catch blocks
    - Adding a Finally block
    - Throwing exceptions
  - **Hands-on lab**: Inheriting from a base class

- **Section 7 – Generics**
  - What are Generics?
  - Creating objects using Generics
  - Defining a custom Generic type
  - Generic Constraints
  - Using the Nullable Structure
  - System.Collections.Generic Classes
  - **Hands-on lab**: Using Generics in Classes

- **Section 8 – Working with Interfaces**
  - What are Interfaces?
  - Defining interfaces
  - Implementing interfaces
  - Interfaces and Polymorphism
  - Interfaces in the .NET Framework
  - Implementing IEnumerable
  - **Hands-on Lab**: Comparing Objects with IComparable

- **Section 9 – Delegates and Events**
  - The role of Events and Delegates in .NET
  - Understanding events in VB applications
  - Understanding and Creating Events
  - Understanding and Creating Delegates
  - Hooking up Event Handlers with AddHandler
  - **Hands-on lab**: Adding Delegates and Events to a class

- **Section 10 – Using the Base Class Library**
  - Overview of functionality in the framework class library
  - Working with System.IO classes
    - Stream readers and writers
    - Reading files
    - Writing to files
    - Working with Memory Streams
  - Working with Dates and Times
  - Accessing remote data and sending email with System.Net classes
  - Building strings with the StringBuilder class
  - Pattern searching with Regular Expressions
  - Working with Threads
  - **Hands-on lab**: Reading and writing to the file system

- **Section 11 – Data Access with ADO.NET**
  - Introduction to ADO.NET
  - What's new in ADO.NET?
  - Managed Provider Classes in ADO.NET
    - Connection
    - Command
    - DataReader
    - DataAdapter
    - DataSet
  - Generic database access with DbProviderFactory classes
  - Using Multiple Active Resultsets (MARS)
  - **Hands-on lab** – Adding ADO.NET functionality to VB applications

- **Section 12 – Introduction to Language Integrated Query (LINQ)**
  - What is Language Integrated Query (LINQ)
  - The role of anonymous types
  - LINQ Expressions
  - Lambda Expressions
  - Using LINQ to Objects
  - Using LINQ to SQL
  - **Hands-on lab** – Querying a Database with LINQ to SQL

Please contact your ROI Representative to discuss customizing/tailoring this course to your unique environment!!!