

Course 458: C# 3.0 Programming with Visual Studio 2008 (5 days)

Course Description...

With the release of .NET 3.5, Visual Studio and the C# have been significantly upgraded to enable developers to build applications more quickly than ever using enhanced language features and Language Integrated Query (LINQ). The C# 3.0 Programming with Visual Studio 2008 course provides an in-depth, hands-on analysis of the C# language and demonstrates how to develop flexible .NET applications using Visual Studio 2008.

The course begins by providing a look at the different components of the .NET framework and discusses the basic building blocks of the C# language including variables, conditionals and looping. Details about new C# 3.0 features such as default properties, object initializers and extension methods are also covered.

Object-oriented features found in C# are also covered so that students understand how to leverage concepts such as inheritance, method overriding, interfaces, and object hierarchies. After covering the object oriented features available in C#, the course shows several of the exciting new language features available including lambda expressions and LINQ to Objects. Other topics covered include ADO.NET data access technologies along with LINQ to SQL and lambdas.

This course is written by Microsoft .NET MVP Dan Wahlin.

Learning Objectives...

- C# Language Fundamentals
- Object-oriented principles
- C# Generics and other C# 3.0 features
- Visual Studio 2008 features
- The role interfaces play in .NET
- The role of classes, objects, namespaces, and assemblies
- .NET Base Class Libraries
- Components of the .NET framework
- Data access with ADO.NET
- Working with Multiple Threads
- LINQ and Lambdas

Who should attend...

This course is valuable for developers and engineers who are interested in programming using C#.

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.



Course Outline...

➤ Section 1 – Building Applications with the .NET Framework

Before any .NET language is learned students must understand the different components found in the .NET framework. In this section of the course students will be provided with details about the different components.

- 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 –C# Fundamentals

- C# Language Features
 - Compiled
 - Object-oriented
 - Threading support
 - Structured exception handling
 - Garbage collection
- Key Features in C# 3.0
 - Object Initializers
 - Default Properties
 - Extension Methods
 - Lambda Expressions
 - LINQ
- Comparing C# to Java and C++
- Creating a C# Hello World Application
- Compiling C# applications
- **Hands-on lab:** Creating your first C# Program

➤ Section 3 –Visual Studio 2008

- Why use Visual Studio?
- Understanding Solutions and Projects
- Creating a C# solution and project using Visual Studio 2008
 - Project Configuration
 - Compiling projects
 - Debugging projects
- Using Visual Studio 2008 features
 - Split-View Designer
 - WPF/WCF/WF Support
 - Class Designer
 - Code Snippets
 - Refactoring Support
 - Debugger Visualizers
- **Hands-on lab:** Creating Visual Studio 2008 Projects



➤ Section 4 – C# Language Syntax

- C# Basics
 - Writing statements
 - Commenting Code
 - XML Comments
 - Value vs. Reference Types
 - C# Operators
- Defining Variables, Constants, and Arrays in C#
 - What is a variable?
 - Understanding variable scoping
 - Declaring variables
 - Declaring constants
 - Declaring arrays
- Conditionals and Looping
 - if..else statements
 - ? and : operators
 - switch 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
 - Defining method return types
 - Method parameters
 - Returning data from a method
 - Returning by value
 - Returning by reference
- The Role of Namespaces
- What is a struct?
- Differences between classes and structs
- Creating a class in VS 2008 with the Class Designer
- **Hands-on lab:** Creating a C# class with members
Creating a C# 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
- Understanding boxing and unboxing in .NET
- Operator Overloading
- Using .NET Attributes
- Structured Exception handling
 - Error handling in C#



- 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 Struct
- The default keyword
- 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 C# applications
- Understanding and Creating Events
- Understanding and Creating Delegates
- Hooking up Event Handlers
- Using Anonymous Methods with Events
- **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
 - Multiple Active Resultsets (MARS)
 - **Hands-on lab** – Adding ADO.NET functionality to C# 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 course tailoring!!!