Introduction to Microsoft .NET Programming Using Microsoft Visual Studio 2008 (C#)

- **Course Number:** 6368A
- **Course Length:** 1 Day

**Course Overview**

This instructor-led course provides an introduction to developing applications for the Microsoft .NET Framework 3.5 environment using Microsoft Visual Studio 2008. This course is intended for developers who wish to expand their understanding of application development in the .NET Framework, and it provides an initial foundation in .NET that can be built upon with more advanced .NET training.

**Prerequisites**

Before attending this course, students must have:
- An understanding of problem-solving techniques that apply to software development.
- A basic understanding of Web, Macro, and Microsoft Windows scripting techniques, and some experience writing scripts.
- A general understanding of the purpose, function, and features of the .NET Framework.
- Experience in object-oriented design and development.

**Audience**

This course is intended for software development professionals that have a minimum of six months experience developing applications in an object-oriented environment using Microsoft Visual C#, Microsoft Visual Basic, or Java. Delegates should have completed course 6367.

**Course Outline**

**Course Introduction**

Course Introduction

**Module 01 - Software Design and Development in Microsoft Visual Studio 2008**

**Lesson 1: Introduction to Software Design and Development**

Why Software Development Projects Fail
Software Development Process
Software Development Life Cycle Models
Development Methodologies

**Lesson 2: Introduction to Software Development Frameworks and Methodologies**

Overview of Microsoft Solutions Framework
What Is Agile Software Development?
Agile Software Development Methods
MSF for Agile Software Development
Software Development Roles
Software Design Tools
Lesson 3: Introduction to the Microsoft .NET Framework Applications
What Is the .NET Framework?
Microsoft .NET Framework 3.0 Technologies
Microsoft .NET Framework 3.5 Technologies

Lesson 4: N-Tier Application Development
What Are Tiers?
Single-Tier Applications
Dual-Tier Applications
N-Tier Applications

Module 02 - Object-Oriented Programming with Microsoft Visual Studio 2008
Lesson 1: Object-Oriented Programming Concepts
Object-Oriented Programming Terminology
Demo - Using the Visual Studio 2008 Class Designer

Lesson 2: Defining a Class
How to Define a New Class
How to Define Access Levels
How to Add Fields and Methods to a Class
How to Define Overloaded Methods
How to Add Properties to a Class
How to Add Constructors and a Destructor to a Class
How to Add Static (Shared) Members to a Class
How to Annotate a Class with Attributes

Lesson 3: Creating a Class Instance
How to Create and Use an Instance of a Class
How Objects Are Created and Destroyed
How to Write a Dispose Method

Lesson 4: Introduction to Inheritance
What Is Inheritance?
How to Define Base Classes and Derived Classes
What Is Polymorphism?
How to Override Base Class Members
How to Hide or Shadow Base Class Members

Lesson 5: Defining and Implementing Interfaces
What Is an Interface?
How to Create an Interface
How to Implement an Interface
Guidelines for Using Interfaces

Lesson 6: Creating and Using Delegates and Events
What Is a Delegate?
How to Define a Delegate Type
How to Create and Use Delegate Objects
How to Create Events
How to Handle Events

Lesson 7: Generics
Introduction to Generics
Defining Generics
Generic Collections
Module 03 - Data Validation

Lesson 1: Introduction to Data Validation
What Is Data Validation?
Validating at Different Levels
Validating Different Data Types

Lesson 2: Validating Windows Forms Applications
Performing Validation Using Validating Events
MaskedTextBox Control
Overriding Validation and Providing Feedback
Demo - Validating Data in a Windows Forms Application

Lesson 3: Validating ASP.NET Applications
Comparison Between Client-Side and Server-Side Validation
What Are Validators?
Demo - Validating Data in an ASP.NET Application

Module 04 - Debugging and Profiling .NET Applications

Lesson 1: Code Tracing and Debugging
What Is Code Tracing?
Introduction to the Trace and Debug Classes
Considerations When Using Trace Statements
Trace Switches
How to Configure Tracing Features in a Deployed Application
Trace Listeners
Trace Sources
Best Practices for Tracing and Debugging Applications
Demo - Tracing Applications

Lesson 2: Application Profiling
What Is Application Profiling?
CLR Profiler
Demo - Using the CLR Profiler

Module 05 - Monitoring and Logging .NET Framework Applications

Lesson 1: Introduction to Instrumentation
What Is Instrumentation?
Visual Studio 2008 Instrumentation Technologies

Lesson 2: Event Logs
Introduction to Event Logs
Guidelines for Choosing Events to Log
How to Write to the Application Event Log
Application Access to Event Logs
Administration of Event Logs
Demo - Writing to Event Logs

Module 03 Review

Module 04 Review

Module 05 Review
Module 06 - Testing Microsoft .NET Framework Applications

Lesson 1: Introduction to Software Testing
The Importance of Software Testing
Types of Software Tests
Black Box Testing
White Box Testing

Tools for Software Testing
Unit Tests
Object Test Bench
How to Create and Run a Unit Test
Demo - Software Testing
Module 06 Review

Module 07 - Introduction to LINQ

Lesson 1: What’s New in VB.NET and C#
New Features in VB.NET and C#
Implicitly Typed Variables
Object Initializers
Anonymous Types
Extension Methods in C#
Extension Methods in Visual Basic
Lambda Expressions
Demo - The New Language Features

Lesson 2: Introduction to LINQ
What Is LINQ?
LINQ Architecture
LINQ Data Providers
LINQ Queries
Different LINQ Syntax Options
Basic LINQ in C#
Basic LINQ in VB.NET
Query Operators
Demo - LINQ Basics

Lesson 3: LINQ Data Providers
Overview of LINQ to Objects
LINQ to Objects in C#
LINQ to Objects in VB.NET
Overview of LINQ to DataSet
Using LINQ to DataSet in C#
Using LINQ to DataSet in VB.NET
Demo - Using LINQ to DataSet
Module 07 Review

Module 08 - Data Access with LINQ

Lesson 1: LINQ to XML
Overview of LINQ to XML
LINQ Comparisons
Creating XML Trees with New XML Types
Demo - LINQ to XML – Creating XML Trees
XML Literals in VB.NET
Querying New XML Types Using LINQ to XML
Demo - LINQ to XML

Lesson 2: LINQ to Entities
Overview of LINQ to Entities
Overview of the Entity Framework
Entity Framework As an Abstraction Layer
Entity Framework Architecture
Query Options for the Entity Framework
Querying Entity Framework with LINQ to Entities
Execution of LINQ Queries Made on the Entity Framework
Translation of LINQ Queries Made on the Entity Framework
Demo - LINQ to Entities – Querying Data
Adding New Data Using the Entity Framework
Demo - LINQ to Entities – Adding Data
Modifying Data Using the Entity Framework
Demo - LINQ to Entities – Modifying Data

Lesson 3: LINQ to SQL
Overview of LINQ to SQL
Querying with LINQ to SQL
Demo - LINQ to SQL – Retrieving Data
Execution of LINQ to SQL Queries
Demo - LINQ to SQL – Lazy and Explicit Loading
Adding New Data Using LINQ to SQL
Demo - LINQ to SQL – Adding Data
Modifying Data Using LINQ to SQL
Demo - LINQ to SQL – Modifying Data
Module 08 Review

Module 09 - Implementing Security in .NET Applications
Lesson 1: Security Overview
Overview of the .NET Framework Security Architecture
Security Namespaces in the .NET Framework
Security Design Guidelines
What Is Threat Modeling?

Lesson 2: Implementing Code Access Security
What Are the Building Blocks of Secure Code Access?
What Is Evidence-Based Security?
How to Create Strong Names for Assemblies
Introduction to Permissions Sets
Introduction to Code Groups
How to Request Permissions
Demo - Code Access Security

Lesson 3: Implementing Role-Based Security
What Is an Identity?
What Is a Security Principal?
Lesson 4: Using Cryptographic Services
What Is Symmetric Cryptography?
How to Use Symmetric Cryptography
What Is Asymmetric Cryptography?
How to Use Asymmetric Cryptography
What Is Digital Signing?
Using Hash Codes to Ensure Data Integrity
New Cryptographic Features in Framework 3.5
Demo - Cryptography Services
Module 09 Review

Module 10 - Network Programming
Lesson 1: Introduction to Network Programming
The System.Net Namespace
The WebClient Class
The WebResponse and WebRequest Classes
The Dns Class
Lesson 2: Setting Credentials
Introduction to Credentials
The CredentialCache Class
The NetworkCredential Class
Demo - Using a WebRequest to Retrieve Data with the Setting of Credentials
Lesson 3: Sending Mail
The MailMessage Class
Constructing the Message
Sending the Message
Demo - Sending E-mail Using the System.net.Mail Namespace
Module 10 Review

Module 11 - Creating Distributed Applications
Lesson 1: Introduction to Distributed Applications
What Are Distributed Applications?
Options for Creating a Distributed Application
What Are the Web Service Protocols and Standards?
Distributed Applications and Security
Lesson 2: Creating and Consuming XML Web Services
What Is an XML Web Service?
How to Create an XML Web Service
How to Discover an XML Web Service
How to Consume an XML Web Service
Demo - Using a Web Service to Retrieve Data
How to Pass Data to and from an XML Web Service
Security in XML Web Services
How to Deploy an XML Web Service
Lesson 3: Building Windows Communication Foundation Services and Clients
Windows Communication Foundation Service Model
Windows Communication Foundation Interoperability
Windows Communication Foundation Security Model
Windows Communication Foundation Contracts
How to Implement a Windows Communication Foundation Service Contract
Hosting Options for a Windows Communication Foundation Service
Windows Communication Foundation Configuration File
Windows Communication Foundation Bindings
Windows Communication Foundation Clients
Demo - Using WCF to Retrieve Data
Module 11 Review

Module 12 - Configuring .NET Framework Applications
Lesson 1: Introduction to Configuring Applications
History of Configuring Applications
Using .NET Framework Configuration Files
Lesson 2: Using .NET Configuration Files
Introduction to Configuration Elements
Reading Configuration Files
Reading and Writing to Configuration Files Using applicationSettings
Securing Confidential Data
Demo - Configuring Applications
Module 12 Review

Module 13 - Deploying .NET Framework Applications
Lesson 1: Introduction to Assemblies
What Is an Assembly?
What Is the Global Assembly Cache?
How to Delay Sign an Assembly
Assembly Versioning
Lesson 2: Overview of MSBuild
What Is MSBuild?
How MSBuild Works
MSBuild Command-Line Options
MSBuild and Visual Studio 2008
Lesson 3: Deploying .NET Framework Applications by Using ClickOnce
What Is ClickOnce?
ClickOnce Deployment and Update Strategies
Security in ClickOnce Deployment
Demo - Publish an Application Using ClickOnce
Lesson 4: Deploying .NET Framework Applications by Using Windows Installer
Comparison Between ClickOnce and Windows Installer Deployment
Types of Deployment Projects
How to Create a Setup Project
How to Create a Merge Module Project
Deployment Editors
Installation Components
How to Build and Install a Setup Project for a Windows Application
Module 14 - Windows Presentation Foundation Applications

Lesson 1: Introduction to Windows Presentation Foundation
Architecture of Windows Presentation Foundation
Features of Windows Presentation Foundation
User Interface Elements of Windows Presentation Foundation Applications

Lesson 2: Introduction to XAML
What Is XAML?
XAML Namespace Declarations
Using XAML to Define User Interface Elements
Specifying Properties by Using XAML
How to Create Event Handlers

Lesson 3: Programming Windows Presentation Foundation Applications
Introduction to the Application Object Model
Styles and Templates
Graphics and Media Content
Data Binding
Demo - Building a Windows Presentation Foundation Application with Data Binding
Windows Presentation Foundation Interoperability
Module 14 Review
Course Closure

Total Duration: 14 hrs 12 min