Software Skills Training, Inc.

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# ASP.NET MVC Programming Using C#

**Duration:** 5 Days *(Face-to-Face & Remote-Live)*, or 35 Hours *(On-Demand)*

**Price:** $2495 *(Face-to-Face & Remote-Live)*, or $895 *(On-Demand)*

**Discounts:** We offer multiple discount options. Click here for more information.

**Delivery Options:** Attend face-to-face in the classroom, remote-live or via on-demand training.

## Description

This course provides students with hands on experience using Visual Studio to create dynamic web applications using ASP.NET MVC, C#, and .NET Frameworks 4.0 - 4.8. The class provides a thorough introduction to the C# programming language, including coverage of the essentials of the C# programming language, built in data types, operators, control structures, classes and methods, collections and exception handling.

Students learn how to leverage the power of the Model-View-Controller design pattern with the ASP.NET MVC Framework to separate the layers of a web application. Students will use the ASPX and Razor view engines to design a user interface. Students learn how to build models to manage an application's data layer using both the Entity Framework and LINQ to SQL. Students also learn how to build controllers containing action methods to manage communication between views and models.

Other topics include data scaffolding; URL routing; implementing security; using MVC and Web Forms in the same application; unit testing; and deploying ASP.NET MVC applications. Comprehensive labs provide the students with experience creating, debugging, testing and deploying dynamic ASP.NET MVC applications.

## Prerequisites

Knowledge of fundamental HTML syntax is helpful, but not required. Prior experience with a scripting or programming language is required.

## Course Overview

### Introduction to .NET

### Introduction to Visual Studio

- Overview of the .NET Framework
- How .NET is Different from Traditional Programming
- Common Language Runtime (CLR)
- Common Language Specification (CLS)
- Common Type System (CTS)
- .NET Assemblies
- Microsoft Intermediate Language (CIL)
- .NET Namespaces
- .NET Framework Class Library

- Creating a Project
- Using the Code Editor
- Correcting Syntax Errors
- Setting Project Properties
- Adding References
- Compiling a Program
- Running a Program
- Debugging a Program
- Using the MSDN (Help)

### Language Fundamentals

- C# Program Structure
- Defining Namespaces
- Understanding C# Data Types
- Defining Variables and Constants
- Comparing Value Types vs. Reference Types
- Working with Operators and Expressions
- Performing Type Conversions
- Using Console I/O
- Formatting Numbers, Date and Times

### Conditionals and Looping

- `if/else`
- `switch`
- `while` and `do/while`
- `for`
- `foreach`

### Methods and Parameters

- Defining Static and Instance Methods
- Passing Parameters by value and by reference
- Overloading Methods
- Using Variable Length Parameter Lists

### Exception Handling

- What are Exceptions?
- .NET Exception Hierarchy
- Catching Exceptions
- Throwing Exceptions
- Managing Resources with Finally

### Collections

- Defining and Using Arrays
- Understanding `System.Array`
- .NET Collections vs Generic Collections
- Working with Lists
- Working with Dictionaries
- Using LINQ to Objects

### Object-Oriented Programming

- Overview of Object-Oriented Programming
- Building Classes
- Defining Properties
- Using Auto-Implemented Properties
- Defining Methods
- Understanding Constructors
- Extending .NET Classes via Inheritance
- Defining and Implementing Interfaces
- Understanding the Role of Interfaces in .NET

### Overview of ASP.NET MVC

### Developing Controllers

- Overview of Model-View-Controller Design Pattern
- ASP.NET MVC Application Architecture
- Understanding the MVC Execution Process
- Building an ASP.NET MVC Application Using Visual Studio
- Visual Studio MVC Project Templates
- Using a `web.config` File
- Creating Controllers
- Defining Action Methods
- Mapping URLs to Action Methods
- Understanding `ActionResult` Types
- Working with `ViewData` and `ViewBag`

### Developing Views

- Creating Views
- Understanding View Engines
- Using the ASMX View Engine
- Using the Razor View Engines
- Using HTML Helpers
- Adding Validation
- Working with Strongly-Typed Views

### Developing Models

- Creating Model Classes
- Working with the Entity Framework
- Working with LINQ to SQL
- Using Scaffolding

### Routing Control

- Understanding Routing in ASP.NET MVC
- Defining URL Routes
- Registering Routes
- Adding Constraints to Routes
- Debugging Routes

### Integrating ASP.NET MVC and Web Forms

- What are Web Forms
- Using Web Forms in an MVC Application
- Using MVC in a Web Form Application
- Linking to MVC Actions from Web Forms

### MVC Unit Testing

- Test-Driven Development
- Designing Test Cases
- Creating Unit Tests
- Using MS Test

### Securing MVC Applications

- ASP.NET Security
- Windows vs Forms Authentication
- Configuring Authentication
- Configuring Authorization
- Building a Secure Web Site
- Defending against Attacks
    - Cross-site Scripting
    - Session Hijacking
    - SQL Injection
    - Input Forgery

### Deploying ASP.NET MVC Applications

- Understanding Deployment Issues
- Required MVC Assemblies
- Server Requirements

Configuring an ASP.NET Application for Deployment
- Using XCOPY Deployment
- Using WebDeploy

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