

ASP.NET MVC

Overview: ASP.NET MVC is a server-side web framework for building dynamic, data-driven web applications. Since its first release in 2009, it has gained a lot of popularity amongst developers using Microsoft technologies. If you want to get employed as a web developer at a company that utilizes Microsoft technologies, you need to master ASP.NET MVC.

Course Objectives: This course will allow learners to

- ❖ Understand the benefits of MVC design over traditional ASP.NET Web Forms.
- ❖ Understand the about the role of Model, View and Controller in integrating them to develop a complete web application and Request life cycle.
- ❖ Understand how Routing API maps requests to action methods in the controller.
- ❖ Learn about the Razor Syntax Fundamentals, Layout View, Sections and Partial Views
- ❖ Learn how to reuse code rendering HTML using custom HTML Helper method
- ❖ Building Custom Model Binders for typical conditions in which built-in default binders are not usable.
- ❖ Understanding and applying validation framework for both client and server validations.
- ❖ Learn about the Architecture of Config File,App Settings, Exception Handling and Encrypting Connection String.
- ❖ Learn about the Sharing data across requests from same client/user using Cookies and Session management.
- ❖ Learn about the Output Caching and Data Caching.
- ❖ Access databases and performing CRUD operations using LINQ and Entity Framework.
- ❖ Learn about the Windows,Forms and Role-Based Authentication.
- ❖ Implementing ASP.NET Identities in ASP.NET MVC applications.
- ❖ Learn about the Mapping URL to Controller Action Method,Applying Constraints and Attribute Routing in MVC 5.
- ❖ Modularize using Areas.
- ❖ Learn about the Ajax Helper Methods, JQuery UI Controls and JQuery Templates.

- ❖ Compress the output using bundling and minification features.
- ❖ Develop views which are mobile compatible.
- ❖ Develop Service Oriented RESTful services using Web API feature of ASP.NET MVC.
- ❖ Perform automated testing of Web applications created using ASP.NET MVC
- ❖ Build and deploy ASP.NET MVC application to the production server.

Target Audience: These Syllabus is designed for beginners and professionals who want to learn ASP.NET MVC 5 step by step.

Pre-requisite: Basic knowledge of .Net Framework 3.5/4.5, C#,Entity Framework, Linq.

Module 1: Introduction to Web Programming

In this module, you will learn about how the browser and Server gets communicating with each other, life cycle of HTTP, about the http protocol and also the importance of get and post methods.

- ❖ Communication between Web
- ❖ Server and Web Browser
- ❖ HTTP Protocol
- ❖ HTTP Request Life Cycle
- ❖ Request and Response Structure
- ❖ About Get and Post methods

Module 2: Overview of HTML and JavaScript.

In this module, You will learn about the basics of Html, JavaScript language & the Document Object Model, Handling Events in Javascript, Steps for Debugging Javascript, Performing Client side validations and Alter, show, hide and move objects on a web page.

- ❖ HTML Overview
- ❖ HTML Tags Reference
- ❖ HTML Examples
- ❖ Introduction to JavaScript
- ❖ JavaScript Examples

- ❖ Debugging JavaScript in VS.NET

Module 3: Overview of Classic ASP

In this module, You will learn about the how html page is displayed on webserver,how asp page is rendered on the webserver,Asp objects,Installing IIS and ASP on Windows and Html form behavior.

- ❖ ASP Objects
- ❖ Understanding Form Tag
- ❖ Request and Response Model
- ❖ Sample Programs

Module 4: Overview of ASP.NET WebForms

In this module, You will learn about the how to build the application using ASP.Net WebForms,ASP.Net Architecture,ASP.Net WebForms Controls, Page events in page life cycle,Navigation and Masterpage.

- ❖ Creating an ASP.NET Website
- ❖ Using ASP.NET WebForm Controls
- ❖ ASP.NET Architecture
- ❖ Understanding Page Controller
- ❖ Architecture
- ❖ Navigating between Pages
- ❖ Overview of Master Pages

Module 5: Introducing to ASP.NET MVC

In this module, You will learn about the major pieces of the Microsoft ASP.Net MVC Framework , Responsibilities of Model ,View and Controller,benefits of MVC design over traditional ASP.NET Web Forms.

- ❖ What is MVC Architecture?
- ❖ What is ASP.NET MVC?
- ❖ Understanding Model
- ❖ Understanding View
- ❖ Understanding Controller

- ❖ Advantages of MVC based Web Application
- ❖ Features of ASP.NET MVC Framework

Module 6: First MVC Application

In this module, You will learn about the MVC Folder Structure, how to create a new ASP.Net MVC project , Role of Model, View and Controller in integrating them to develop a complete web application and Request life cycle.

- ❖ Software Requirements
- ❖ Developing First MVC Applications
- ❖ Rendering HTML output
- ❖ Understanding Life Cycle of ASP.MVC Request

Module 7: Exploring Controller's

In this module,You will learn about the Passing data from controller to view,Action methods of Controller class,Action Result object returns form action mehods,Action filters and Asynchronous Controllers.

- ❖ Exploring Controllers and ControllerBase class
- ❖ Passing data from Controller to View using ViewData/ViewBag
- ❖ Types of Action Methods
- ❖ Action Method Parameters
- ❖ Action Selectors
- ❖ Action Filters Overview
- ❖ Authentication Filters in MVC 5
- ❖ Building Custom Action Filters
- ❖ Filter Override features.
- ❖ Asynchronous Controllers

Module 8: Exploring Razor Views

In this module, You will learn about the Razor Syntax Fundamentals,Advantages of Razor syntax over traditional aspx markup syntax,Layout View ,Implementing the Sections in view,Partial Views and Types of Views.

- ❖ Types of Views

- ❖ Introducing Razor View
- ❖ Razor Syntax Fundamentals
- ❖ Enum Support
- ❖ Layout view Razor (Master Pages)
- ❖ Significance of `_ViewStart.cshtml`
- ❖ Working with Sections
- ❖ Working with Partial Views
- ❖ Bootstrap support for editor templates

Module 9: Digging into HTML Helpers

In this module, You will learn about what are Html helper methods, how to use them in razor syntax , how to use “For” methods with strongly typed models, overriding the Display and Editor templates and Building Custom Helpers using Extension Methods

- ❖ HTML Helper Methods.
- ❖ Render HTML Form
- ❖ Using DropDownList
- ❖ Binding Html Helper to Model
- ❖ Using “For” Methods with Typed Model
- ❖ Overriding Display Templates
- ❖ Overriding Editor Templates
- ❖ Custom Helper method

Module 10: -- Understanding Model Binders

In this module, You will learn about the Default Model Binders and Building Custom Model Binders for typical conditions in which built-in default binders are not usable.

- ❖ Default model Binder
- ❖ Complex Type Model Binding
- ❖ FormCollection Model Binding

- ❖ Http Posted File Model Binding
- ❖ Bind Attribute

Module 11: Annotations and Validations

In this module, You will learn about how to implement data annotation ,applying validation framework for both client and server validations, how to build custom validations and Developing Custom Unobtrusive Client Side Validation

- ❖ Overview of Data Annotations
- ❖ Annotations and Validation Attributes
- ❖ How Validation Works
- ❖ Explicit server side validations of Models
- ❖ Custom Validations using IValidatableObject
- ❖ Developing Custom Unobtrusive Client Side Validation
- ❖ Applying Annotations to Model classes using Metadata class

Module 12: Web Configuration File and Global Application Class

In this module, You will learn about the Architecture of Config File,App Settings, HttpApplication Class,Limitation of Exception handling,how to catch specific type of errors and how to Encrypting Connection String.

- ❖ Architecture of Config File
- ❖ Machine.config and Web.Config
- ❖ AppSettings
- ❖ system.web Section
- ❖ Exception Handling
- ❖ Location Section
- ❖ Encrypting ConnectionString

Module 13: State Management Techniques

In this module, You will learn about the Sharing data across requests by same client/user using Cookies and Session management.

- ❖ Cookies
- ❖ Managing Cookies in ASP.NET MVC Application
- ❖ Authentication in Cookies
- ❖ Cookie Dictionary
- ❖ Sessions Management
- ❖ Sharing data between clients using static class

Module 14: Web Caching

In this module, You will learn about the Output Caching and Data Caching.

- ❖ Output Cache
- ❖ Implement DataCaching using ObjectCache and MemoryCache

Module 15: CRUD operations using Entity Framework

In this module, You will learn about the CRUD operations using LINQ and Entity Framework,Repository patterns, Generic Repository and Understanding about Depedency injection.

- ❖ Basic CRUD Operations using Scaffold Templates
- ❖ Separation of work using BO Classes
- ❖ Using Single Database Context Object across all Business Objects
- ❖ Writing Generic Class / Repository
- ❖ Caching in Repository
- ❖ Custom Controller Factory and Dependency Injection.

Module 16: Authentication and Authorization

In this module, You will learn about the Types of Authentication, how to use Windows authentication, how to use Forms authentication,encrypting password in config file and Role-Based Authentication.

- ❖ Overview of Authentication and Authorization
- ❖ Types of Authentication
- ❖ [Authorize] and [AllowAnonymous] attributes
- ❖ Windows Authentication Implementation
- ❖ Forms Authentication Implementation
- ❖ Roles Based Security

Module 17: ASP.NET Identities

In this module, You will learn about the Single Sign On using Facebook & Google, Two Factor Authentication, Email Confirmation and Role Management.

- ❖ ASP.NET Identity Introduction
- ❖ OWIN and Katana
- ❖ Customizing Template Generated Code
- ❖ Extending Identity Model and using Integer Key instead of String Key
- ❖ OAuth and Social Authentication
- ❖ Code MVC Application with Facebook, Twitter, LinkedIn and Google OAuth2 Sign-on
- ❖ Implementing Email Confirmation
- ❖ Two Factor Authentication
- ❖ User and Role Management

Module 18: URL Routing

In this module, You will learn about the Mapping URL to Controller Action Method, Applying Constraints and Attribute Routing in MVC 5.

- ❖ Overview
- ❖ Mapping URL to Controller Action Method
- ❖ Applying Constraints on Route parameters
- ❖ Resolving Namespace Ambiguity Ignoring Routes
- ❖ Attribute Routing improvements in MVC 5

Module 19: Working with Areas

In this module, You will learn about the concept of Areas, how to add an area for MVC project, Linking between areas .

- ❖ Understanding Areas
- ❖ Adding Areas
- ❖ Registering Areas
- ❖ Linking between Areas

Module 20: AJAX and JQuery

In this module, You will learn about the Ajax Helper Methods, how to use JQuery UI Controls and JQuery Templates.

- ❖ Ajax implementation using JQuery
- ❖ Using Ajax.BeginForm Helper method
- ❖ JQuery UI Controls
- ❖ JQuery Templates

Module 21: Bundling and Minification

In this module, You will learn about Optimizing the CSS & .JS files using bundling and minification features, Using Wildcard to Select Files and Using Cdn feature while bundling

- ❖ Why Bundling and Minification
- ❖ What is Bundling?
- ❖ What is Minification?
- ❖ Impact of Bundling and Minification
- ❖ Implementing Bundling and Minification
- ❖ Creating and Using Bundles
- ❖ Using Wildcard to Select Files
- ❖ Using a CDN while Bundling

Module 22: Mobile Compatibility

In this module, You will learn about the Mobile Compatible Views, how to Customize the display modes and Overriding the Display modes.

- ❖ Built in support for DisplayModes
- ❖ Adding Custom DisplayModes
- ❖ Overriding DisplayModes

Module 23: RESTful Services using ASP.NET Web API

In this module, You will learn about the RESTful services, Calling the Web API with Javascript and jQuery HttpResponseMessage and IHttpActionResult and Creating a Web API that Supports CRUD Operations using EF.

- ❖ Introduction to REST Protocol
- ❖ Web API Routing
- ❖ Developing Sample application
- ❖ Creating a Web API that Supports
- ❖ CRUD Operations using EF
- ❖ Calling Web API Service methods from JavaScript/jQuery

Module 24: TDD and Debugging a Web Application

In this module, You will learn about the Test Driven Development cycle, how to use Mock Framework .

- ❖ Create and Run Unit Tests
- ❖ Create Mocks;
- ❖ Create and run Web Tests, including using Browser Link;

Module 25: Multi Layered Architecture Demo App

In this module, You will learn about the creating reusable and flexible application using Multi Layered Architecture.

Real-time Project involving most of the above concepts with following will be provided

- Product Abstract Document
- Requirement Specification Document
- **Step-by-Step procedure for building the project from ground up**
- Complete Source Code
- Database Script with Sample data
- Instructions to Setup the Project on a Development box
- Instruction to Deploy the project on Production Box / Microsoft Azure

At the end of the course participants will be able to

1. You will have a better understanding of MVC Architecture.
2. Build forms with server-side and client-side validation.
3. Implement authentication and authorization using ASP.NET MVC.
4. Build RESTful services using ASP.NET Web API
5. Use powerful jQuery plug-ins
6. You will have a better understanding of Multi-Layered Architecture and Repository Pattern.
7. You will have a better understanding of Dependency Injection.
8. You will able to test the Application using Unit Testing.
9. You will have better understanding of a Mock framework.
10. You will able to deploy the application in Webserver/Azure