

This five-day course provides a comprehensive and practical hands-on introduction to developing Web applications using ASP.NET 4.5.1 and Visual Studio 2013. It includes an introduction to ASP.NET MVC, a newer Web programming framework that incorporates use of the Model-View-Controller (MVC) pattern. It also includes coverage of using ASP.NET AJAX to build rich client applications and the use of Web API to create HTTP services. The fundamentals of Web applications are reviewed, and a testbed is established for ASP.NET and Internet Information Services. The architecture of ASP.NET is outlined, including the role of compilation, the Page class and code-behind. Web Forms are introduced, including server controls, view state, life cycle, and the event model. Request/response HTTP programming using ASP.NET is covered. Visual Studio 2013 is used to greatly simplify the development of ASP.NET Web applications, including facilitating UI design. ASP.NET Web applications are covered, including issues of application and session state and the use of cookies. Server controls represent an important innovation in ASP.NET and are covered in detail, including validation, rich controls, and user controls. There is an introduction to caching in ASP.NET, which provides an effective mechanism for optimizing the performance of your ASP.NET application. The fundamentals of configuration and security are introduced. Diagnostics and debugging are covered, including the use of tracing. Additional server controls are introduced, including menus and master pages. Data access is covered in some detail in two chapters, including an introduction to ADO.NET, Language Integrated Query (LINQ), the Entity Data Model (EDM) and the powerful data access controls provided by ASP.NET 4.5. The LocalDB version of SQL Server 2012 Express is used as the database. This section of the course is tied together by a progressive case study illustrating a Web site for a publishing company. The final section of the course introduces three important ASP.NET technologies: ASP.NET AJAX, ASP.NET MVC, and ASP.NET Web API.

Course Objectives:

- Gain a thorough understanding of the philosophy and architecture of Web applications using ASP.NET.
- Acquire a working knowledge of Web application development using Web Forms and Visual Studio 2013.
- Optimize an ASP.NET Web application using configuration, security, and caching.
- Access databases using ADO.NET, LINQ and the Entity Data Model
- Use newer features in ASP.NET.
- Implement rich client applications using ASP.NET AJAX.
- Create Web applications using the Model-View-Controller design pattern.
- Create HTTP services using ASP.NET Web API.

Audience: Experienced application developers or architects responsible for Web applications in a Microsoft environment

Prerequisites: A working knowledge of C# and .NET Framework. Knowledge of JavaScript is recommended for the AJAX chapter.

Number of Days: 5 days

<p>1 Introduction to ASP.NET Web Application Fundamentals Benefits of ASP.NET An Echo Program ASP.NET Features Compiled Code Server Controls Browser Independence Separation of Code and Content State Management</p> <p>2 Web Forms Architecture Web Forms Architecture HelloCodebehind.aspx HelloCodebehind.aspx.cs Page Class Code-Behind Inheritance Model Web Forms Page Life Cycle View State Enabling View State for Controls Web Forms Event Model Page Processing Page Events Page Properties Page Directive Tracing</p> <p>3 ASP.NET and HTTP Classical Web Programming Active Server Pages Object Model Request and Response Objects Request/Response in ASP.NET HttpRequest Class Properties of HttpRequest Using HttpRequest Class HTTP Collections HttpResponse Class Redirect HttpUtility Echo.aspx EchoBack.aspx GET and POST Compared QueryString and Forms Collections</p> <p>4 Web Applications Using Visual Studio Using Visual Studio Starter Web Site ASP.NET Empty Web Site Adding a Web Form Default.aspx Adding Controls</p>	<p>Using Components in ASP.NET Running Under IIS Shadow Copying Temporary Copy of the Component ASP.NET Applications Global.asax Web Application Life Cycle Code in Global.asax Log Class Adding Global.asax File ListBox Data Binding Items Collection XHTML XHTML in Visual Studio Flow Positioning</p> <p>5 State Management and Web Applications Session and Application State Session Object Page_Load Session Variable Issues Session State and Cookies Session State Timeout Session State Store Application State Implementing Application State Global.asax Users.aspx.cs Multithreading Issues Bouncing the Web Server Cookies Cookies and ASP.NET HttpCookie Properties Acme Travel Agency Case Study State Management Techniques</p> <p>6 Server Controls Server Controls in ASP.NET HTML Server Controls Using HTML Server Controls HTML vs. Web Forms Server Control Code for Login HTML Controls in Visual Studio Using HTML Controls Web Controls Validation Controls Required Field Validation Regular Expression Validation</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	Rich Controls		Windows Authentication – Analysis
	Copying a Web Site		Authorization
	User Controls	9	Debugging, Diagnostics and Error Handling
	Using a User Control		ASP.NET Diagnostics
	Copyright.ascx		Debugging Using Visual Studio
7	Copyright.ascx.cs		Debugging Calculator
	Caching in ASP.NET		Application-Level Tracing
	What Is Caching?		Tracing Calculator
	Need for Caching (Why Cache?)		Using the Page Cache
	Data to be Cached – Time Frame		Preparing to Debug
	ASP vs. ASP.NET Response Model		Trace Messages
	Caching in ASP.NET		Tracing the Calculator Page
	Three Types of Caching in ASP.NET		Conditional Tracing
	Output Caching		Trace Category
	@ OutputCache Directive		Trace Warning
	@ OutputCache – Attributes in Detail		Exceptions in Trace
	VaryByParam in Detail		Errors in ASP.NET
	HttpCachePolicy Class		Uncaught Exception
	Page Fragment Caching		Custom Error Pages
	Common Mistakes in Using Fragment Caching	10	More Server Controls
	Data Caching or Application Caching		ASP.NET Control Improvements
	Add an Item to the Cache Object		Newer Controls in ASP.NET
	Insert and Add Methods		Master Pages
	Expiration		HTML 5 and Modernizr
	Problems in Caching		Creating Content Pages
8	ASP.NET Configuration and Security		TreeView Control
	One-minute Introduction to XML!		Master Page Application
	ASP.NET Configuration - Overview	11	ADO.NET and LINQ
	Multi-level Configuration		ADO.NET
	Configuration Hierarchy		ADO.NET Architecture
	Web.Config File Structure		.NET Data Providers
	Web.Config Sections		.ADO.NET Interfaces
	Application Settings		.NET Namespaces
	ASP.NET Security – Overview		Connected Data Access
	Role-Based Security and CAS		SQL Express LocalDB
	Types and Steps		SqlLocalDB Utility
	Steps in Enabling Role-Based Security		Visual Studio Server Explorer
	Three Ways to Authenticate		Queries
	Forms Authentication – Default.aspx		ADO.NET with ASP.NET
	Forms Authentication – Web.Config		Web Client Isolation
	Features of Forms Authentication		Web Client Database Code
	Authentication Cookie		Using Commands
	Forms Authentication Classes		Creating a Command Object
	Customizing Forms Authentication		Using a Data Reader
	Authentication Source		Use of Session State
	Forms Authentication – Analysis		Generic Collections
	Windows Authentication		Executing Commands

Parameterized Queries		Object Data Source
DataSet	13	ASP.NET AJAX
DataSet Architecture		Desktop Applications
Why DataSet?		Web Applications
DataSet Components		Plug-Ins
DataAdapter		Client-Side Scripting
Data Access Class		Script Code
Retrieving the Data		JavaScript in ASP.NET
Filling a DataSet		Dynamic Pages
Accessing a DataSet		Efficient Page Redraws
Using a Standalone DataTable		AJAX
Adding a New Row		Google Maps
Searching and Updating a Row		ASP.NET AJAX
Deleting a Row		Partial Page Rendering
Row Versions		UpdatePanel Control
Row State		AJAX Extensions Controls
Iterating Through DataRows		AJAX Client Library
Command Builders		Using the Client Library
Updating a Database		ScriptManager Control
Language Integrated Query (LINQ)		Client Library Namespaces
ADO.NET Entity Framework		Sys.Debug Tracing
IntelliSense		Document Object Model
Basic LINQ Query Operators		JavaScript for Simple Calculator
Obtaining a Data Source		Using the Client Library
Filing		AJAX Control Toolkit
Ordering		Installing AJAX Control Toolkit
Aggregation		ACT Controls in Visual Studio
Obtaining Lists and Arrays		AjaxControlToolkit.dll
Deferred Execution		ToolkitScriptManager
Modifying a Data Source		Extender Controls
Entity Framework in a Class Library		NumericUpDownExtender Control
Data Access Class Library	14	ASP.NET MVC
Client Code		Model-View-Controller (MVC)
12 Data Controls and Data Binding		What is ASP.NET MVC?
Data Access in ASP.NET		Advantages of ASP.NET MVC
SQL Generation Options		Advantages of Web Forms
Enable Edit and Delete		Starter Application
Editing Records		Simple App with Controller Only
GridView Control		Action Methods and Routing
DetailsView Control		Action Method Return Type
Storing the Connection String		Rendering a View
Protecting the Configuration String		Creating a View in Visual Studio
FormView Control		The View Web Page
Master/Detail Web Pages		Dynamic Output
Data Binding		Razor View Engine
Template Editing		Embedded Scripts
Using XML Data		Using a Model with ViewBag
Multiple-Tier Data Access		Controller Using Model and ViewBag

- View Using the Model and ViewBag
- Using Model Directly
- A View Using Model in Visual Studio
- View Created by Visual Studio
- Using Forms
- HTML Helper Functions
- Handling Form Submission
- Model Binding
- Greet View
- Input Validation
- Nullable Type
- Checking Model Validity
- Validation Summary
- 15 ASP.NET Web API**
- REST
- Representation, State and Transfer
- Collections and Elements
- Specifying a Start Page
- Implementing PUT verb
- Using Fiddler
- Composing a Request
- ASP.NET MVC and Web API
- Route Registration
- HTTP Response Codes
- POST Response Code
- HttpResponse Exception
- Web API Clients
- HttpClient
- Intializing HttpClient
- Issuing a GET Request
- Issuing a POST Request
- 16 Appendix A – Learning Resources**
- 17 Appendix B – HTTP Pipeline**
- Web Applications
- Customizing the HTTP Pipeline
- Customizing Applications
- Customizing a Welcome Application
- Logger Class
- Custom Handlers
- IHttpHandler Interface
- .ashx Files
- Custom Modules
- Using DemoModule in IIS Express
- Using IIS 7
- 18 Appendix C: Hosting in IIS 7.5**
- Internet Information Services
- Installing IIS 7.5