

**Introduction to Blazor WebAssembly**

**Course Number:** ASPNC-110  
**Duration:** 3 days

**Overview**

[Blazor](https://dotnet.microsoft.com/apps/aspnet/web-apps/blazor) WebAssembly is a .NET Core web technology for hosting applications that can run your client-side C# code directly in the browser using [WebAssembly](https://webassembly.org/).

In this Introduction to Blazor WebAssembly training course, attendees learn how to build UI apps leveraging the same component-based patterns popularized by libraries such as Angular and React, but using C# programming. Students learn how to reduce dependence on JavaScript UI libraries and frameworks and utilize JavaScript only when needed, not as the basis of their client-side applications. This course also uses an ASP.NET Core backend.

**Prerequisites**

All students must have:

* C# programming experience
* HTML, CSS, and JavaScript development experience

**Materials**

All Blazor training students receive comprehensive courseware.

**Software Needed on Each Student PC**

* Windows 10 or later with at least 8 GB RAM
* Visual Studio 2019 or later
* .NET Core 3.1 or later SDK
* LocalDB or another version of SQL Server
* Postman application
* Additional lab files that Accelebrate provides

**Objectives**

* Understand the Blazor platform
* Build UIs with components
* Utilize data binding and event handling
* Compose components
* Build Blazor pages and configure routing
* Deploy a Blazor WebAssembly application to production
* Consume server data via REST APIs
* Unit test Blazor apps

**Outline**

* Introduction
  + What is Blazor?
  + Blazor Hosting Models
  + What is Blazor Server vs. Blazor WebAssembly?
  + What is WebAssembly?
  + Browser Compatibility
  + Web Assembly vs. JavaScript
  + How does .NET Core / C# run in a web browser?
* Blazor WebAssembly Application
  + Project Template
  + Create a New Application
  + Hosting Blazor WebAssembly with a ASP.NET Core MVC Server
  + Configuration
  + Dependency Injection
  + Environments
  + Logging
  + Handling Errors
  + Debugging WebAssembly
* Razor Components and Data Binding
  + What is a Component?
  + Creating a Data Model
  + Binding the Data Model to the HTML
  + Passing Arbitrary Attributes
  + Handling Events
  + Manually Trigger State Updates and Re-rendering
* Composing Razor Components
  + Decompose a Component into Smaller Components
  + One-Way Data Binding
  + Two-Way Data Binding
  + Pass Data from a Parent Component to a Child Component using Parameters
  + Pass Data from a Child Component to a Parent Component using Event Callbacks
  + Use Keys to Optimize Performance
  + Use Refs to Access DOM Elements
  + Razor Component Libraries
  + Razor Component Design Patterns
    - Parameters are Immutable
    - Lift State Up
    - Managing State in General
* Razor Component Forms
  + What is the purpose of Form?
  + Collecting Data using a Form, Input, Select and Textarea Elements
  + Explore Form Element Two-Data Binding
  + Build Forms with the Blazor Edit Form Razor Component
  + Explore the Concept of the Edit Context
  + Use the Specialized Edit Form Controls
    - Input Text
    - Input TextArea
    - Input Select
    - Input Number
    - Input Checkbox
    - Input Date
  + Applying Validation to the Form
  + Decorating the View Model with Validation Attributes
  + Code Custom Validation Attributes
* Razor Component Pages
  + What is the Page model?
  + Differences between Razor Pages and Razor Components
  + Using a Razor Component as a Page
  + Explore the Router Component
  + Configuring Page Routing
  + Route to Components from Multiple Assemblies
  + Using Route Parameters
  + Using the Query String
  + Applying Authorization to a Razor Component Page
  + Using Authorization within the Component Tree
* Using Server Data
  + ASP.NET Core MVC Web API
    - What is ASP.NET Core MVC?
    - What is a REST API?
    - What is an API Controller?
    - Injecting the Http Client
    - Exploring the Http Client
    - Calling a REST API from a Blazor Component using the HttpClient
* Interacting with JavaScript
  + What is the JavaScript Interop?
  + When is JavaScript needed?
  + Synchronous vs. Asynchronous Calls
  + How to call a JavaScript function from a Component
  + How to call C# code from JavaScript
  + Calling Static Methods
  + Calling Instance Methods
  + Organizing JavaScript Code within a Blazor WebAssembly App
  + Explore JavaScript Ecosystem
    - Client-Side Libraries
    - NPM & Yarn
    - Webpack
    - Useful Libraries
* Unit Testing
  + What is Unit Testing?
  + Principles of Unit Testing
    - Defining a Unit
    - Setup/Teardown
    - Testing in Isolation
    - Determining What to Test
    - Code Coverage
    - Test Frameworks
    - Stubs, Mocks and Spies
  + xUnit
    - What is xUnit?
    - Testing Framework
    - Facts vs. Theory
    - Assertions
    - Integration with Visual Studio
  + Razor Components
    - What Should be Tested on a Razor Component?
    - What is bUnit?
    - Using bUnit with xUnit
    - Setup and define components under tests in C# or Razor syntax
    - Verify outcome using semantic HTML comparer
    - Interact with and inspect components
    - Trigger event handlers
    - Provide cascading values
    - Inject services
    - Mock IJsRuntime
    - Perform snapshot testing
* Conclusion