



Introduction to ASP.NET Core 3 Development

Course ISI-1525

5 Days

Instructor-led, Hands on

Course Information

This ASP.NET Core training focuses on the patterns and practices necessary for building enterprise-class web applications and services with ASP.NET Core 3. The hands-on exercises completed during the course include the development of a containerized microservice-based architecture. Special attention is given to topics such as asynchronous communication, high availability, and resiliency.

At Course Completion

After completing this course, students will be able to:

- Learn how to configure a development environment to support multiple .NET Core versions and deployment environments
- Understand the architecture and configuration of an ASP.NET Core application
- Acquire hands-on experience with using the ASP.NET Core routing to support a RESTful API design
- Learn about several different data access technologies (including Dapper and EF Core) and design patterns such as CQRS, Repository, and Unit of Work
- Understand the key aspects of a Microservice architecture and how to apply the principles of Domain-Driven Design (DDD)
- Use Docker to containerize and deploy a microservice-based application
- Learn about the several microservice communication styles including asynchronous message-based and event-based patterns
- Gain hands-on experience designing for high-availability and resiliency
- Understand how to secure a Web API using token-based authentication with policy-based authorization
- Learn how to use Microsoft's new Blazor technology for implementing client-side functionality with C#

Prerequisites

Before attending this course, students must have:

- Extensive experience using the C# language
- Previous experience developing applications with ASP.NET Core or ASP.NET MVC
- Some familiarity with HTML, CSS, and JavaScript
- Some knowledge of Docker is recommended but not required.

Contact ISInc for more information at 916.920.1700 or by visiting our website at <http://www.isinc.com>



Course Outline

Module 1: Setting up a Development Environment

- .NET Core SDK
- Visual Studio vs. VS Code
- Version Management with global.json
- Docker for Windows/macOS
- Remote Development using SSH

Module 2: ASP.NET Core Application Architecture

- NuGet Packages and Metapackages
- Application Startup
- Hosting Environments (Dev, Test, Stage, Prod)
- Middleware and the Request Processing Pipeline
- Services and Dependency Injection

Module 3: Application Configuration

- Configure and ConfigureServices
- Configuration Providers and Sources
- Configuration API
- Options Pattern
- HTTPS and HTTP/2

Module 4: Request Routing

- RESTful Services
- Endpoint Routing
- Attribute-Based Routing • Route Templates • Route Constraints HTTPS, GDPR, and HTTP/2

Module 5: Controllers

- Responsibilities
- Requirements and Conventions
- Explicit Dependencies Principle
- Action Results

Module 6: Data Access

- Persistence Ignorance
- Object-Relational Mapping
- ADO.NET vs. Dapper vs. EF Core

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- Command Query Responsibility Segregation (CQRS)
- Repository and Unit of Work Patterns

Module 7: Web APIs

- ApiController Attribute
- CRUD Operations
- Content Negotiation
- Bad Requests
- Cross-Origin Resource Sharing (CORS)

Module 8: Using Docker

- Advantages of Containerized Applications
- Containers vs. Virtual Machines
- Microsoft ASP.NET Core Images
- Multi-Stage Builds
- Deploying a Monolithic Application

Module 9: Microservice Architecture

- Communication Styles
- Container Networking
- Addressability and the Service Registry
- Eventual Consistency
- Asynchronous Message-Based Communication
- Asynchronous Event-Driven Communication

Module 10: Resiliency

- Handling Partial Failures
- Retries and Exponential Backoff
- Circuit Breaker Pattern
- Health Monitoring and Alerts

Module 11: Security and Authentication

- Token-Based Authentication
- Policy-Based Authorization
- IdentityServer
- Application Secrets

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Module 12: Client-Side Development with Blazor

- Server-Side vs. Client-Side
- Browser Support
- Forms and Validation
- Routing
- Authentication