

KOENIG SOLUTIONS · COURSE OUTLINE

Developing ASP.NET Core 9 Web Applications

Learn to design, build, secure and deploy web applications and APIs with ASP.NET Core 9, MVC, Razor Pages and Blazor.

6 Days

48 HOURS

14

MODULES

50

TOPICS

13

HANDS-ON LABS

COURSE OVERVIEW

Developing ASP.NET Core 9 Web Applications is an intensive, hands-on program designed to help developers master modern web application development using .NET 9, C# 12, and the ASP.NET Core 9 framework. This course equips participants with the knowledge and skills to design, develop, test, secure, and deploy scalable web applications and RESTful APIs using MVC, Razor Pages, and Minimal APIs.

WHO THIS COURSE IS FOR

Web Developers

Backend Developers

Software Engineers

API Developers

Full-Stack Developers

PREREQUISITES

Participants should have:

- Prior experience with C# programming (preferably C# 10 or above).
- Basic understanding of HTML, CSS, and JavaScript.
- Familiarity with Visual Studio 2022 or VS Code.
- (Optional) Exposure to SQL Server and Git/GitHub is recommended.

LEARNING OBJECTIVES

- Explain the ASP.NET Core 9 architecture and request pipeline
- Compare MVC, Razor Pages and Minimal APIs for application design
- Configure middleware, dependency injection and service lifetimes
- Implement controllers, routing and action filters
- Build Razor views with tag helpers and view components
- Apply model validation and data binding to forms and JSON
- Implement data access with EF Core 9 and migrations
- Secure applications with authentication and authorization policies

14 Modules, 50 Topics

01

Lab

Exploring ASP.NET Core 9

TOPICS

- ASP.NET Core 9 architecture and request pipeline
- .NET 9 minimal hosting model updates
- Razor Pages vs MVC vs Minimal APIs
- Modern development tools and templates

02

Lab

Application Design and Architecture

TOPICS

- MVC, Razor Pages, and Minimal APIs: choosing the right model
- Folder structure, environment configuration, and DI setup
- Environment variables, secrets, and configuration providers

03

Lab

Middleware and Services

TOPICS

- Creating custom middleware
- Dependency Injection and Service Lifetimes
- Logging and telemetry (OpenTelemetry integration in .NET 9)

04

Lab

Controllers and Routing

TOPICS

Attribute routing and route groups · Action filters and custom filters · Minimal API routing vs MVC routing

05

Lab

Razor Views and Tag Helpers

TOPICS

Razor view syntax and model binding · Partial views and layout views · Tag Helpers and View Components

06**Lab**

Models, Validation, and Data Binding

TOPICS

Model binding improvements in .NET 9 · Data annotations and Fluent Validation · Handling forms and JSON payloads

07**Lab**

Data Access with EF Core 9

TOPICS

- EF Core 9 features (bulk operations, interceptors)
- Repository and Unit of Work patterns
- Database migrations and seeding

08**Lab**

Testing, Logging, and Troubleshooting

TOPICS

Unit testing with xUnit and Moq · Integration testing in .NET 9 · Centralized logging and exception handling

09**Lab**

Security in ASP.NET Core 9

TOPICS

- Authentication (Identity, OAuth2, and OpenID Connect)
- Authorization policies and role-based access
- Security headers, CSRF, and input sanitization

10**Lab**

Client-Side Integration and Blazor

TOPICS

- Blazor Server vs Blazor WebAssembly
- Razor Components in .NET 9
- Using Bootstrap 5 and modern front-end libraries

11

Lab

API Development with Minimal APIs

TOPICS

Minimal API syntax and performance benefits · Route groups and filters in .NET 9 · Versioning and Swagger documentation

12

Lab

Real-Time Communication and Performance

TOPICS

SignalR for real-time apps · Caching with distributed memory and Redis · Background services and IHostedService

13

Lab

Deployment and Cloud Integration

TOPICS

- Publishing apps to Azure App Service
- Using Docker with ASP.NET Core 9
- CI/CD pipelines with GitHub Actions / Azure DevOps

Advance Topics (Quick Examples, Overview) 1 Day (No Labs, Only Trainer Examples)

TOPICS

- Overview of C# advanced features in .NET 9
- async and await in-depth
- Tasks, threads, and cancellation tokens
- Improved Threading Model
- Parallel Test Execution
- Native AOT (Ahead-of-Time Compilation)
- Meta programming in .NET Core 9
- Persisted Assembly Builder
- Enhanced Reflection APIs
- Optimized Garbage Collector

HANDS-ON LABS

Practise What You Learn

#	MODULE	ACTIVITY
01	Exploring ASP.NET Core 9	Build your first ASP.NET Core 9 web app
02	Application Design and Architecture	Design a multilayered ASP.NET Core 9 project
03	Middleware and Services	Build and register custom middleware for request tracking
04	Controllers and Routing	Implement controllers and routes for student operations
05	Razor Views and Tag Helpers	Create a student dashboard using Razor views

#	MODULE	ACTIVITY
06	Models, Validation, and Data Binding	Add validation and input forms to your app
07	Data Access with EF Core 9	Integrate EF Core 9 with MVC and perform CRUD operations
08	Testing, Logging, and Troubleshooting	Write unit tests and implement logging middleware
09	Security in ASP.NET Core 9	Secure your application with ASP.NET Core Identity
10	Client-Side Integration and Blazor	Create a responsive UI using Razor components and Bootstrap
11	API Development with Minimal APIs	Create and document a RESTful API with Swagger UI
12	Real-Time Communication and Performance	Implement live notifications using SignalR
13	Deployment and Cloud Integration	Containerize and deploy your app to Azure

WHAT IS INCLUDED

Everything You Need to Succeed

- Koenig course material for every module
- Hands-on exercises throughout the course
- Delivery by certified instructors and subject matter experts
- Course completion certificate from Koenig

Who We Are

Established in 1993, Koenig Solutions is a globally recognised training provider with 35+ technology partnerships, 5,000+ training programmes and a network of certified instructors and subject matter experts, supporting individuals and enterprise teams worldwide.

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