

# ASP.NET SYLLABUS

## Module 1: Introduction to ASP.NET

- What is ASP.NET and .NET ecosystem
- ASP.NET vs ASP.NET Core
- Features and architecture
- Installing Visual Studio & .NET SDK
- Project structure overview
- Running first ASP.NET application

## Module 2: C# Fundamentals

- Data types, variables, operators
- Control statements (if, loops)
- Methods and classes
- OOP concepts (inheritance, polymorphism)

## Module 3: ASP.NET Core Basics

- Creating ASP.NET Core Project
- Understanding Middleware
- Dependency Injection
- Configuration & appsettings.json
- Environment setup

## Module 4: MVC Architecture

- Model-View-Controller concept
- Controllers and Actions
- Views and Razor syntax
- Models and Data Binding
- Layouts and Partial Views

## Module 5: Routing

- Conventional Routing
- Attribute Routing
- Route Parameters
- URL Patterns
- Custom Routes

## Module 6: Razor View Engine

- Razor Syntax
- Passing data (ViewData, ViewBag, Model)
- Forms in Razor
- Tag Helpers
- Validation messages

## Module 7: Models & Entity Framework Core

- Introduction to Entity Framework Core
- DbContext and DbSet
- Code First Approach
- Migrations
- CRUD Operations

## Module 8: Forms & Validation

- Model Binding
- Data Annotations
- Server-side Validation
- Client-side Validation

## Module 9: Authentication & Authorization

- Identity Framework
- User Registration & Login

- Role-based Authorization
- Claims-based Authorization
- Security best practices

## **Module 10: Web API Development**

- Introduction to Web APIs
- Creating API Controllers
- HTTP Methods (GET, POST, PUT, DELETE)
- JSON Data Handling
- API Testing (Postman/Swagger)

## **Module 11: Dependency Injection & Services**

- Built-in DI container
- Service Lifetimes (Transient, Scoped, Singleton)
- Creating Custom Services

## **Module 12: State Management**

- Session & Cookies
- TempData
- Caching (Memory Cache, Distributed Cache)

## **Module 13: File Handling**

- Uploading Files
- Saving Files to Server
- File Validation
- Serving Files

## **Module 14: Logging & Error Handling**

- Logging with built-in providers
- Exception Handling Middleware

- Custom Error Pages

## **Module 15: Security Best Practices**

- Data Protection
- HTTPS & SSL
- Preventing XSS, CSRF
- Secure Authentication

## **Module 16: Frontend Integration**

- Using Bootstrap with ASP.NET
- JavaScript/AJAX integration
- Calling APIs from frontend

## **Module 17: Deployment**

- Publishing application
- Hosting on IIS
- Environment configuration
- Performance optimization

## **Module 18: Real-World Projects**

- CRUD Web Application
- Blog Management System
- E-commerce Backend (API)
- Admin Dashboard