**ASP.NET MVC 5 Course outline**

| **Week** | **Day** | **Topic** | **Details** |
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| 1 | 1 | Introduction to C# & OOP | - Overview of .NET Framework - Introduction to C# - Data types, variables, and operators - Control structures (if, switch, loops) - Object-Oriented Programming (OOP) Concepts - Classes and objects - Inheritance and polymorphism - Encapsulation and abstraction |
|  | 2 | SOLID Principles & Advanced C# | - SOLID Principles - Single Responsibility Principle - Open/Closed Principle - Liskov Substitution Principle - Interface Segregation Principle - Dependency Inversion Principle - Advanced C# Concepts - Delegates, events, and lambda expressions - LINQ (Language Integrated Query) - Asynchronous programming (async/await) |
|  | 3 | Getting Started with ASP.NET MVC | - Overview of ASP.NET MVC - MVC design pattern - Advantages of using MVC - Setting up the development environment - Creating your first MVC application - Project structure - Controllers, Views, and Models |
|  | 4 | Routing and Controllers | - Understanding ASP.NET Routing - Default routes and attribute routing - Creating and configuring controllers - Action methods - View results and action results - Dependency Injection in MVC |
|  | 5 | Views and Razor Syntax | - Working with Views - Creating views - Strongly typed views - Razor syntax overview - Inline expressions and code blocks - Layouts and partial views - HTML Helpers and Tag Helpers |
| 2 | 6 | Models and Data Annotations | - Creating Models - Defining model classes - Data annotations for validation - Working with Entity Framework - Code-first approach - Migrations and database management |
|  | 7 | Forms and HTTP Methods | - Session Overview - Handling forms in ASP.NET MVC - Topics - Creating forms with HTML helpers - Handling GET and POST requests - Form submission and model state - Activities - Create and submit forms in the application. |
|  | 8 | CRUD Operations | - Implementing CRUD functionality - Create, Read, Update, Delete actions - Using the Repository pattern - Abstracting data access - Unit of Work pattern |
|  | 9 | AJAX and Partial Views | - Session Overview - Using AJAX in ASP.NET MVC - Topics - Implementing AJAX requests - Working with partial views - Activities - Create an AJAX-enabled feature in the application. |
|  | 10 | Validation and Error Handling | - Model validation techniques - Client-side vs server-side validation - Handling errors in MVC applications - Custom error pages - Exception handling filters |
| 3 | 11 | Advanced Entity Framework | - Session Overview - Exploring advanced features of Entity Framework - Topics - Relationships (one-to-many, many-to-many) - Lazy vs. Eager loading - Using LINQ with Entity Framework - Activities - Create complex queries using Entity Framework. |
|  | 12 | Security and Authentication | - Session Overview - Ensuring application security - Topics - Authentication and authorization - Implementing ASP.NET Identity - Securing controllers and actions - Activities - Set up user authentication in the application. |
|  | 13 | Advanced MVC Features | - Filters in MVC - Action filters, authorization filters, exception filters - Custom model binders - Creating custom HTML helpers |
|  | 14 | Testing in ASP.NET MVC | - Introduction to unit testing - Setting up a test project - Writing unit tests for controllers and models - Mocking dependencies with Moq - Integration testing |
|  | 15 | Building the SportsStore Application (Part 1) | - Setting up the project structure - Implementing the product catalog - Product model and repository - Creating views for product listing |
| 4 | 16 | Building the SportsStore Application (Part 2) | - Implementing the shopping cart - Cart model and logic - Integrating with product catalog |
|  | 17 | Checkout and Order Processing | - Creating checkout views - Handling form submissions - Processing orders (using a mock email service) |
|  | 18 | Security and Authentication (Repeat) | - Implementing authentication and authorization - Forms authentication - Securing admin areas - ASP.NET Identity overview |
|  | 19 | Finalizing the SportsStore Application | - Adding image uploads and handling files - Final touches on UI (using Bootstrap) - Deploying the application - Recap and Q&A session |
|  | 20 | Final Project Presentations | - Session Overview - Presenting final projects - Course summary and final reflections - Activities - Students present their final projects and receive feedback. - Recap key concepts learned - Discuss next steps for continued learning. |