

**Course title:** OOP with C# and ASP.NET

**Duration:** 100 hours, 50 lessons

**Prerequisite:** Programming fundamentals course

## **OOP**

1. Intro & Pillars of OOP
2. Class Type, Partial Classes, Records
3. Constructor, this Keyword, Memory Allocation
4. static keyword
5. Encapsulation
6. Access Modifiers, Nested Types
7. Accessors and Mutators, Properties
8. Constant and Read-Only Field Data
9. Inheritance
10. Polymorphism
11. virtual and override Keywords
12. Abstract Class, Interface

## **Advanced Programming**

13. Exception Handling
14. The IEnumerable and IEnumerator Interfaces
15. The ICloneable and IComparable Interfaces
16. Indexer Methods, Operator Overloading, Extension Methods
17. Collections and Generics
18. Attribute-Based Programming
19. Delegates, Events, and Lambda Expressions
20. LINQ fundamentals
21. Multithreaded, Parallel, and Async Programming
22. Object Lifetime

## **Algorithms and Data Structures**

23. Measuring Performance
24. Linked List
25. Stack
26. Queue
27. Binary Trees
28. Hash Tables

29. Sorting Algorithms

30. Set Collection and Algorithms

### **T-SQL and SQL Server**

31. Background to T-SQL Querying and Programming

32. Single-Table Queries

33. Joins

34. Subqueries

35. Table Expressions

36. Set Operators

37. Data Modification

38. Intro ADO.NET and EF

### **ASP.NET**

39. MVC Pattern

40. Routes and URLs,

41. Middleware

42. Controllers and Actions

43. Views, Layouts, HTML Helpers, and Data Validation

44. Authentication and Authorization