

# Tech Mahindra - .NET Full Stack

**Eligibility:** Freshers having basic knowledge of any object-oriented programming language (C#, Java, C++ or Python), Web and RDBMS/SQL concepts

- **C# Programming(3-4 DAYS)**

- .NET Framework Fundamentals
- Visual Studio IDE Fundamentals
- C# Language Features
- Working with arrays and collections
- Working with variables, operators, and expressions
- Decision and iteration statements
- Managing program flow and events
- Working with classes and methods
- OOP concepts
- Properties, Auto Implemented
- Delegates, Anonymous Methods and Anonymous Types
- Extension methods, Sealed Classes/Methods, Partial Classes/Methods
- Asynchronous programming and threading
- Data validation and working with data collections including LINQ
- Handling errors and exceptions
- Working with Files
- Unit Testing - Nunit framework

- **Version control using GIT(DONE)**

- Learn the key concepts of the Git source control system
- Step through the entire Git workflow
- Compare the different states in Git
- Compare between branches and commits
- Manage files with Git (move, rename, delete)
- Update files managed outside Git
- Create and fork repositories on GitHub
- Create branches and resolve merge conflicts

- **SQL Server(3 DAYS)**

- RDBMS Normalization and Data Integrity Constraints
- Overview of Microsoft SQL Server
- Setting up and connecting to the Database
- Introduction to SELECT Statements
- Filtering Data with the WHERE Clause
- Sorting Data with the ORDER BY Clause
- Querying Multiple Tables with Joins
- Sub Queries, Correlated Sub Queries
- Aggregate Functions
- Grouping Data with the GROUP BY Clause
- Filtering Groups with the HAVING Clause
- Implementing stored procedures, triggers, UDFs with T-SQL

- Overview on ACID Properties, Transactions
- Overview on Concurrent Transactions
- Overview on limitations with Concurrent Transactions
  
- **ASP.NET Core & EF Core(4-5 DAYS)**
  - Introduction to .NET Core –Features & Architecture
  - ASP.NET Core MVC -Model, View, Controller & Actions
  - ASP.NET Core MVC -Helpers and Data Passing Techniques
  - ASP.NET Core MVC Validation - Client Side and Server Side
  - Repository Design Pattern and Dependency Injection
  - Introduction to Entity Framework Core (EF Core)
  - EF Core Database Modeling- Database and Code First Approach
  - Creating Restful API using ASP.NET Core Web API (Controller based and Minimal)
  - ASP.NET Core-Security - Authentication Options, Identity
  - ASP.NET Core –Middleware, Pipeline and Filters
  
- **Agile, Scrum and DevOps Fundamentals(2 DAYS)**
  - Introduction to Agile Methodology
  - Scrum Fundamentals
  - Scrum Roles, Artifacts and Rituals
  - DevOps - Architecture, Lifecycle, Workflow & Principles
  - DevOps Tools Overview - Jenkins, Docker, Kubernetes
  
- **Web Design & Development(DONE)**
  - HTML5 - Syntax, Attributes, Events, Web Forms 2.0, Web Storage, Canvas, Web Sockets
  - CSS3 - Colors, Gradients, Text, Transform
  - Bootstrap for Responsive Web Design
  - JavaScript - Core syntax, HTML DOM, objects, classes, Async
  - Ajax and jQuery Introduction
  
- **Front-end Development using Angular(4-5 DAYS)**
  - Setting up Development & Build Environment: Node.js and NPM
  - Introduction to TypeScript
  - Working with OOP concepts with TypeScript
  - Angular Fundamentals
  - Angular CLI
  - Debugging Angular applications
  - Components & Databinding in Depth
  - Angular Directives
  - Using Services & Dependency Injection
  - Angular Routing
  - Observables
  - Handling Forms in Angular Apps
  - Output transformation using Pipes
  - Making Http Requests
  - Authentication & Route Protection
  - Dynamic Components
  - Angular Modules & Optimizing Angular Apps
  - Deploying an Angular App
  - Angular Animations
  - Adding Offline Capabilities with Service Workers
  - Unit Testing in Angular Apps (Jasmine, Karma)



## **EXPECTED LESSON PLAN**

### **Week 1(17/06/2024—23/06/2024)**

#### **TOPICS**

- 1.C# programming
- 2.Angular

### **Week 2(24/06/2024—30/06/2024)**

#### **TOPICS**

- 1.Asp .net
- 2.SQL

### **Week 3(1/07/2024—7/07/2024)**

#### **TOPICS**

- 1.PROJECTS
- 2.AGILE

### **Week 4(8/07/2024—14/07/2024)**

#### **TOPICS**

- 1.PROJECTS

### **Week 5(15/07/2024—21/07/2024)**

#### **TOPICS**

- 1.PROJECTS