

Title	C# & .NET Technologies
Code	18MCA304
Hrs / Week	03
Credits	03

Course Objectives:

students should understand :

- .NET Platform/Framework and it's components
- C# Fundamentals
- OOPs in C#
- Collections and their benefits
- WPF and its advantages
- ASP.NET Framework to build Web Sites and Web Applications
- Session Management in ASP.NET

Course Outcomes:

On successful completion of the module students will be able to:

- Explain .NET Framework, its components and different languages
- Write C# code to build console applications using OOPs
- Design and Build WPF applications
- Design and Develop ASP.NET Web Sites and Web Applications
- Manage Sessions in ASP.NET Web Applications to keep track of user activities

Module -1

9 Hrs

Introduction to .NET and C#

Some Key Benefits of the .NET Platform, Building Blocks of the .NET Platform, .NET-Aware Programming Languages, An Overview of .NET Assemblies, Understanding the Common Type System, Understanding the Common Language Runtime, Exploring an Assembly Using ildasm.exe, The Anatomy of a Simple C# Program, The System. Console Class, System Data Types and Corresponding C# Keywords, Working with String Data, Understanding Implicitly Typed Local Variables, Decision Constructs and the Relational/Equality Operators, C# Iteration Constructs

Text 1: Ch1, Ch3

Module -2

9 Hrs

Methods, Arrays and OOPs

Methods and Parameter Modifiers, Understanding C# Arrays, Understanding the enum Type, Understanding the Structure Type, Understanding Value Types and Reference Types,

Understanding C# Nullable Types, Introducing the C# Class Type, Understanding Constructors, The Role of the this Keyword, Understanding the static Keyword, Defining the Pillars of OOP, C# Access Modifiers, The First Pillar: C#'s Encapsulation Services, Understanding Automatic Properties, Understanding Object Initialization Syntax, Working with Constant Field Data, The Basic Mechanics of Inheritance, The Second Pillar of OOP: The Details of Inheritance, Programming for Containment/Delegation, The Third Pillar of OOP: C#'s Polymorphic Support, Understanding Base Class/Derived Class Casting Rules, The Master Parent Class: System.Object

Text 1: Ch4, Ch5, Ch6

Module - 3

9 Hrs

Collections, Delegates and Events

The Motivation for Collection Classes, The Problems of Nongeneric Collections, The Role of Generic Type Parameters, The System.Collections.Generic Namespace, The System.Collections.ObjectModel Namespace, Creating Custom Generic Methods, Creating Custom Generic Structures and Classes, Constraining Type Parameters, Understanding the .NET Delegate Type, The Simplest Possible Delegate Example, Sending Object State Notifications Using Delegates, Understanding Generic Delegates, Understanding C# Events, Understanding C# Anonymous Methods, Understanding Lambda Expressions

Text 1: Ch9, Ch10

Module-4

9 Hrs

Windows Presentation Foundation

The Motivation Behind WPF, The Various Flavors of WPF, Investigating the WPF Assemblies, Building a WPF Application Without XAML, Building a WPF Application Using Only XAML, Transforming Markup into a .NET Assembly, Understanding the Syntax of WPF XAML, Building a WPF Application Using Code-Behind Files, Building WPF Applications Using Visual Studio, Building a Custom XAML Editor with Visual Studio, A Survey of the Core WPF Controls, A Brief Review of the Visual Studio WPF Designer, Controlling Content Layout Using Panels, Building a Window's Frame Using Nested Panels, Understanding WPF Commands, A Deeper Look at WPF APIs and Controls, Building the Ink API Tab, Introducing the Documents API, Building the Documents Tab, Introducing the WPF Data-Binding Model

Text 1: Ch27, Ch28

Module-5**9 Hrs****Web and ASP.NET**

The Role of HTTP, Understanding Web Applications and Web Servers, The Role of HTML, The Role of Client-Side Scripting, Posting Back to the Web Server, An Overview of the ASP.NET API, Building a Single-File ASP.NET Web Page, Building an ASP.NET Web Page Using Code Files, The ASP.NET Web Site Directory Structure, Interacting with the Incoming HTTP Request, Interacting with the Outgoing HTTP Response, The Life Cycle of an ASP.NET Web Page, Understanding the Nature of Web Controls, The Control and WebControl Base Classes, Major Categories of ASP.NET Web Controls, The Role of the Validation Controls, Working with Themes, ASP.NET State Management Techniques, Understanding the Role of ASP.NET View State, The Role of the Global.asax File, Understanding the Application/Session Distinction, Working with the Application Cache, Maintaining Session Data, Understanding Cookies, The Role of the <sessionState> Element, Introducing the ASP.NET Profile API

Text 1: Ch32, Ch33, Ch34**Content beyond the Syllabus:**

1. Design and Develop Windows applications using ADO.NET
2. Consume ASP.NET web service in PHP or JSP
3. Design and Develop ASP.NET MVC application

Text Books:

1. Pro C# 5.0 and the .NET 4.5 Framework, 6th Edition by Andrew Troelsen [ISBN-13: 978-1430242338]

Reference Books:

1. Sams Teach Yourself the C# Language in 21 Days by Bradley L. Jones [ISBN-13: 978-0672325465]
2. C# 6.0 and the .NET 4.6 Framework, 7th Edition by Andrew Troelsen, 2015

Website:

1. <https://www.javatpoint.com/c-sharp-tutorial>
2. <https://www.tutorialspoint.com/wpf/>
3. <https://www.tutorialspoint.com/asp.net/>