

MCTS Syllabus

Microsoft .NET Framework, Application Development Foundation (C# Programming)

Course Details:

- **Duration: 27 Days (3 Hours Daily).**
- **Certificates: MCP.**
- **Exams: 70-536.**

The MCTS Certification

- **MCP: Microsoft Certified Professional.**

Part 1

Module 1: Introduction :

- ❖ NET Framework Overview:
 - Common Language Specification – CLS.
 - Common Language Runtime – CLR
 - Framework Class Library - FCL (Base Class Library - BCL).
- ❖ C# Overview.

Module 2: Comments and Variables and Data Types:

- ❖ Comments.
- ❖ Variables:
 - Identifier.
 - Notation Types.
- ❖ Data Types :
 - Value Types.
 - Reference Types.
- ❖ Variable Declaration.
- ❖ Constant and Readonly.
- ❖ Nullable Types.
- ❖ Conversion Types:
 - Implicit Conversion:
 - Widening Conversion.
 - Narrowing Conversion.
 - Explicit Conversion :
 - Casting.

- Convert Command.
- Using Parse.
- Using ToString Method.
- Boxing and Unboxing

Module 3: Output and Input Operations :

- ❖ NameSpace:
 - System NameSpace.
 - Console Class.
- ❖ Output Operations:
 - Write Method.
 - WriteLine Method.
- ❖ Escape Sequence.
- ❖ Text and Numeric Formatting.
- ❖ Input Operations:
 - Read Method.
 - ReadLine Method
- ❖ Using MessageBox with Console Application.

Module 4: Operators :

- ❖ Primary Operators.
- ❖ Arithmetic Operators.
- ❖ Decrement and Increment Operators.
- ❖ Assignment Operators.
- ❖ Relational Operators.
- ❖ Logical Operators.
- ❖ Bitwise Operators.

Module 5: Control Structures : Control Statements :

- ❖ Selection Structures:
 - if Selection Structure.
 - if/else Selection Structure.
 - Multiple-Selection Structure.
 - Switch Multiple-Selection Structure.
- ❖ Repetition Structures :
 - for Repetition Structure.
 - while Repetition Structure.
 - do/while Repetition Structure.
 - Foreach Repetition Structure.
- ❖ Jump Statements :
 - break Statement.
 - continue Statement.
 - goto Statement.
 - return Statement

Module 6: Methods and Parameters :

- ❖ General Syntax.
- ❖ Access Modifiers.
- ❖ Static and non-static Methods:
 - Static and non-static Methods Definition.
 - Static and non-static Methods Calling.
- ❖ Void and return value Methods:
 - Void and Return Value Methods Definition.
 - Void and Return Value Methods Calling.

- ❖ Passing Arguments:
 - Pass-by-Value.
 - Pass-by-Reference.
 - Using out.
- ❖ Recursion.
- ❖ Methods Overloading.

Module 7: Arrays :

- ❖ One Dimensional Array:
 - Declaring One Dimensional Array.
 - Initialization One Dimensional Array.
 - Printing One Dimensional Array.
 - One Dimensional Array Property (length).
- ❖ Two Dimensional Array :
 - Declaring Two Dimensional Array.
 - Initialization Two Dimensional Array.
 - Printing Two Dimensional Array.
 - Two Dimensional Array Properties.
- ❖ Passing Array to Methods.
- ❖ Passing Array Elements to Methods.
- ❖ Using params Keyword.
- ❖ Array Class:
 - Introduction to Array Class.
 - Array Class Methods.
- ❖ Jagged Array.
- ❖ Using foreach Repetition Structure with Array.

Module 8: Structure and Enumeration :

- ❖ Structure :
 - Structure Definition.
 - Working with structure.
 - DateTime Structure.
- ❖ Enumeration :
 - Enumeration Definition.
 - Working with enumeration.

Module 9: Object-Based Programming : Part 1:

- ❖ Built-In Classes:
 - Math Class.
 - String Class.
 - Random Class.
- ❖ User Defined Classes:
 - User-Defined Class Definition.
 - Access Modifiers.
 - Static Class vs. non-static Class.
 - Class Contents:
 - Instance Variables:
 - Static Class Members.
 - Non-static Class Members.
- ❖ Constructors:
 - Constructors Overview.
 - Using this Reference with Constructors.
 - Using Overloaded Constructors.

- Using Overloaded Constructors by Using This.
- ❖ Destructors ,Finalize Method and Garbage Collector.
- ❖ Properties.
- ❖ Operator Overloading.

Module 10: Object-Based Programming : Part 2

- ❖ Partial Class.
- ❖ Nested Classes.
- ❖ Generics.
- ❖ Indexers.

Module 11: Object-Oriented Programming :

- ❖ Inheritance:
 - Single Inheritance.
 - Multi-Level Inheritance.
 - Is Operator.
 - Relations Between Classes.
 - Class Diagram.
- ❖ Interfaces:
 - Creating an Interface.
- ❖ Abstract Classes and Methods.
- ❖ sealed Classes.
- ❖ Polymorphism.

Module 12: Delegate and Event :

- ❖ Delegates:
 - Understanding the Delegate.
 - Working with Delegate.

- Anonymous Methods.
- ❖ Events.

Module 13: Error Types :

- ❖ Error types.
- ❖ Syntax Error Overview.
- ❖ Runtime Errors :
 - Runtime Errors Overview.
 - Try-catch-finally Technique.
 - Exception Class.
- ❖ Working with Exception Handling.
- ❖ Logical Errors:
 - Logical Errors Overview.
 - Using break point.

Module 14: Class Library:

- ❖ Class Library Overview.
- ❖ Create class library.
- ❖ Working with class library.

Module 15: Graphical User Interfaces Concepts :

- ❖ Form.
- ❖ Labels.
- ❖ TextBoxes.
- ❖ Buttons.
- ❖ ColorDialog.
- ❖ FontDialog.
- ❖ GroupBoxes.

- ❖ Panels.
- ❖ CheckBoxes.
- ❖ RadioButtons.
- ❖ PictureBoxes.
- ❖ OpenFileDialog.
- ❖ ListBoxes.
- ❖ ComboBoxes.
- ❖ Menu.
- ❖ Tab.
- ❖ Timer.
- ❖ UserControl.
- ❖ WebBrowser.

Part 2

Module 2: Input / Output (I/O) :

- ❖ File System Classes :
- ❖ Informational Classes :
 - FileInfo Class.
 - DirectoryInfo Class.
 - DriveInfo Class.
- ❖ Utility Classes :
 - Path Class.
 - File Class.
 - Directory Class.
 - File System Watcher.
- ❖ Reading and writing files :
 - FileStream.
 - BinaryWriter & BinaryReader.
 - MemoryStream.
- ❖ Compression Streams :
 - File Compression.
 - File Decompression.

Module 3: Searching, Modifying and Encoding Text :

- ❖ Searching.
- ❖ Regular Expression :
 - Introduction to Regular Expression.

- Regular Expression Characters.
- Working with Regular Expression.
- ❖ Encoding and decoding :
 - Encoding Types.
 - Encoding Class.
 - Specify the Encoding Type When Writing into File.
 - Specify the Encoding Type When Reading a File.

Module 4: Collections and Generics :

- ❖ Collecting Data Items :
 - ArrayList.
 - Working with Sequential Lists :
 - Queue.
 - Stack.
 - Working with dictionaries :
 - HashTable.
 - SortedList.
 - Working with Bits :
 - BitArray.
 - BitVector32.
- ❖ Generic collections :
 - List.
 - Queue.
 - Stack.
 - HashTable.
 - SortedList.

- Generic LinkedList.

Module 5: Serialization :

❖ Introduction to Serialization :

- What Is Serialization?
- Serializing objects:

❖ Binary Formatter:

- How to Serialize an Object.
- How to Deserialize an Object.

❖ Soap Formatter :

- How to Serialize an Object.
- How to Deserialize an Object.

❖ XML Serialization :

- How to Use XML to Serialize an Object.
- How to Use XML to Deserialize an Object.

Module 6: Graphics :

❖ Drawing Graphics:

❖ How to Specify the Location of Controls.

❖ How to Specify the Size of Controls.

❖ How to Specify the Color of Controls.

❖ How to Draw Lines and Shapes :

- Draw Line.
- Draw Lines.
- Draw Rectangle.
- Draw Ellipse.

- Draw Pie.
- Draw Arc.
- Draw Polygon.

❖ How to Fill Shapes :

- Draw Fill Rectangle .
- Draw Fill Ellipse.
- Draw Fill Pie.
- Draw Fill Polygon.
- How to Customize Pens.

❖ Working with Images :

- How to Create and Save Pictures.
- How to Use Icons.

❖ Formatting Text:

- Create Font Object.
- Writing a Text.

Module 7: Threading :

- ❖ Introduction to Threads.
- ❖ Life Cycle of the Thread.
- ❖ Delegates & Threads.
- ❖ Creating Threads :
- ❖ Creating a Simple thread.
- ❖ Using Thread.Join.
- ❖ Thread Priority.
- ❖ Passing Data to Threads.

- ❖ Stopping Threads.
- ❖ Multithreading.

Module 8: Application Domains and Services :

- ❖ Introduction to application domains :
 - What Is an Application Domain?
 - Creating application domains.

Module 9: Installing and Configuring Applications :

- ❖ Creating an Installer.
- ❖ Configuration Settings.

Module 10: Instrumentation :

- ❖ Logging Events :
 - Creating an Event Log.
 - Deleting an Event Log.
 - Writing to an Event Log.
- ❖ Performance.
- ❖ Detecting Management Events :
 - Enumerating Logical Drives.
 - Retrieve Information about Services that Are Paused.
 - Enumerating Network Adapters.

Module 11: Application Security :

- ❖ Understanding Code Access Security :
 - What Is Code Access Security?
 - What Is Evidence?
 - What Is a Permission?

- What Is a Permission Set?
- What Are Code Groups?
- ❖ Using Declaration Security to Protect Assemblies :
 - How to Create Assembly Declarations.

Module 12: User and Data Security :

- ❖ Authenticating and Authorizing Users:
 - WindowsIdentity Class.
 - WindowsPrincipal Class.
- ❖ Encryption and Decryption Data :
 - Understanding encryption and decryption algorithms.
 - Encrypting and Decrypting Data with Symmetric Keys.

Module 13: Interoperation :

- ❖ Introduction to Interoperation.
- ❖ Using COM Objects :
 - Importing Type Libraries.
 - Using a COM Application From .NET.
- ❖ Exposing .NET Component to COM :
 - Building .NET Components for Use by COM.
 - Hiding Public .NET Classes from COM.
- ❖ Using Unmanaged Code :
 - Calling Platform Invoke.

Module 14: Reflection :

- ❖ Understanding reflection :
 - Examining an Assembly.

❖ Reflecting Types :

- Getting Types.

Module 15: Mail :

❖ Creating Mail Message.

❖ Sending Mail Message.

❖ How to Attach Files.

Module 16: Globalization :

❖ Using Culture Information :

- CultureInfo Class.
- RegionInfo Class.

MCTS Syllabus

Microsoft .NET Framework 3.5, ADO.NET Application Development

Course Details:

- Duration: 10 Days (3 Hours Daily).
- Certificates: MCTS.
- Exams: 70-516.

The MCTS Certification

- MCTS - Microsoft .NET Framework 3.5, ADO.NET Application Development

Module1 Creating Database Connections

- ❖ Connecting to a Data Source
- ❖ Using Data Providers and More Complex Connection Scenarios
- ❖ Working with Multiple Active Result Sets

Module 2: Selecting and Querying Data

- ❖ Building Command Objects
- ❖ Consuming Data

Module 3: DataSets

- ❖ Introduction to DataSets
- ❖ Working with Typed DataSets

Module 4: Updating Data

- ❖ Updating Data
- ❖ Data Integrity and Transactions

Module 5: Synchronizing Data

- ❖ Caching Data
- ❖ Microsoft Sync Framework

Module 6: Introducing LINQ

- ❖ Constructing Queries with LINQ
- ❖ Shaping Results with LINQ

Module 7: XML

- ❖ DataSets and XML
- ❖ Querying XML with LINQ

Module 8: LINQ to SQL

- ❖ Introduction to LINQ to SQL
- ❖ Updating Data

- Using Stored Procedures

Module 9: Using the Entity Framework

- ❖ Generating and Querying an Entity Data Model

Module 10: ADO.NET Data Services

- ❖ Exposing the Data Service
- ❖ Consuming the Data Service

MCTS 2010 Syllabus

Microsoft .NET Framework 3.5, ASP.NET Application Development

Course Details:

- **Duration: 10 Days (3 Hours Daily).**
- **Certificates: MCTS.**
- **Exams: 70-515.**

The MCTS Certification

- **MCTS - Microsoft .NET Framework 3.5, ASP.NET Application Development**

Module 1: Introducing ASP.NET 3.5

- ❖ Understanding the Players
- ❖ Creating a Web Site and Adding New Web Pages
- ❖ Working with Web Configuration Files

Module 2: Adding and Configuring Server Controls

- ❖ Understanding and Using Server Controls
- ❖ Exploring Common Server Controls
- ❖ Exploring Specialized Server Controls

Module 3: Input Validation and Site Navigation

- ❖ Performing Input Validation
- ❖ Performing Site Navigation

Module 4: ASP.NET State Management

- ❖ Using Client-Side State Management
- ❖ Using Server-Side State Management

Module 5: Customizing and Personalizing a Web Application

- ❖ Using Master Pages
- ❖ Using Themes
- ❖ Using Web Parts

Module 6: Working with ASP.NET AJAX and Client-Side Scripting

- ❖ Creating AJAX-Enabled Web Forms
- ❖ Creating Client Scripts with the AJAX Client-Side Library

Module 7: Using ADO.NET, XML, and LINQ with ASP.NET

- ❖ Using the ADO.NET Disconnected Classes
- ❖ Using the ADO.NET Connected Classes
- ❖ Working with XML Data

Module 8: Working with Data Source and Data-Bound Controls

- ❖ Connecting to Data with Data Source Controls
- ❖ Working with Data-Bound Web Server Controls

Module 9: Writing and Working with Services

- ❖ Creating and Consuming XML Web Services
- ❖ Creating and Consuming WCF Services

Module 10: Creating Custom Web Controls

- ❖ Working with User Controls
- ❖ Working with Custom Web Server Controls

Module 11: Programming the Web Application

- ❖ Using Web Site Programmability
- ❖ Using the ASP.NET Intrinsic Objects

Module 12: Monitoring, Troubleshooting, and Debugging

- ❖ Debugging an ASP.NET Application
- ❖ Troubleshooting a Running ASP.NET Application

Module 13: Globalization and Accessibility

- ❖ Configuring Globalization and Localization
- ❖ Configuring Accessibility

Module 14: Implementing User Profiles, Authentication, and Authorization

- ❖ Working with User Profiles
- ❖ Using ASP.NET Membership
- ❖ Securing Your Site

Module 15: Creating ASP.NET Mobile Web Applications

- ❖ Building Mobile Applications

Module 16: Deploying, Configuring, and Caching Applications

- ❖ Deploying Web Applications
- ❖ Using Caching to Improve Performance