

From Zero to C#

This course is for anyone who wants to learn to become a C# .NET programmer. C# is one of the most popular programming languages in the world today for the .NET platform. C# can create any type of .NET application just like any other .NET language. In this course you are introduced to the C# language. By the end of this course you will have learned techniques to allow you to create C# applications and have a good foundation on which to advance to more advanced courses.

Learning Objectives

An overview of Visual Studio .NET

An introduction to the C# language

Object Oriented Programming principles

Using Controls

Event Programming Basics

Variables and Operators

Controlling flow using if statements and loops

Creating classes with methods and properties

Prerequisites

This course is designed for programmers who already have some experience with another programming language. You should be familiar the Windows operating system, have access to a version of Visual Studio and the .NET Framework.

Course Length

4 days

Module 1: Overview of C#

Overview of the C# language

Overview of Microsoft .NET

- The Common Language Runtime (CLR)
- Features of C#
- What you can build with C#
- Application components

Module 2: Introduction to Visual Studio

- Configuring Visual Studio
- Exploring the IDE
- Using the help
- Working with the editor

Module 3: OOP Overview

- Introduction to object-oriented programming
- Working with classes and objects
- Properties
- Methods
- Events
- Static vs instance
- Constructors and destructors

Module 4: Variables and Operators

- Data types
- Nullable types
- Declaring variables
- Scope and lifetime
- Naming variables
- The object data type
- Operators

Module 5: Flow Structures

- If statement
- Switch statement
- Pre-processor directives
- While and do loops
- For loops
- Break statement

Module 6: Methods

- Naming and scope
- Void methods
- Event procedures
- Functions
- Parameters
- Output parameters
- Built-in methods

Module 7: Events

- Event-driven programming basics
- Form events
- Events on controls

Module 8: Namespaces

- Overview of namespaces
- System namespace
- Configuration namespaces
- Namespaces dealing with data

System.IO namespace

Module 9: Classes & Collections

Date class

Read-only properties

Creating methods

Passing data to a constructor

Collections

Module 10: Arrays and Constants

Converting arrays from one form to another

Creating your own arrays

Things you can do with arrays

Multi-dimensional arrays

Constants

Module 11: Debugging

Three modes of Visual Studio

Invoking the debugger

Stepping in and over code

Debugging windows

Breakpoints

Conditional breakpoints

Watching variables

Debug and Trace classes

Assert class

Module 12: Exception Handling

- Try...catch...finally
- Exception bubbling
- Working with specific exceptions
- Throwing exceptions
- Passing error information
- Creating a custom exception class
- Global exception handling

Module 13: LINQ

- Overview of LINQ
- Selecting, ordering, searching, aggregating data
- Applying LINQ to strings, files and folders, XML, DataTable and Entity Framework

Module 14: Entity Framework

- An overview of the Entity Framework
- Simple queries with the Entity Framework
- Calling stored procedures with the Entity Framework

Module 15: Generics

- Overview of Generics
- Using Generic classes
- Built your own Generic classes

Module 16: StringBuilder and String Handling

- Efficient string concatenation
- Checking for empty or null strings
- Overriding ToString() method

Module 17: Extension Methods

- Overview of extension methods
- Create your own extensions methods

Module 17: Reflection

- Overview of reflection
- When to use reflection
- Efficient methods of reflection

Module 18: Singletons

- Overview of singletons
- Simple singleton usage
- Ensure only one singleton is created
- Examples of using singletons

Module 19: Caching

- Using the MemoryCache class

Module 20: Cryptography

Encryption and decryption

Hashing

Create your own cryptography wrapper classes