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T E C H N O L O G Y   T R A I N I N G

# Introduction to Programming and Coding | C#.Net Basics for Non-Developers
**Kickstart Your Software Development Skills with this Gentle Introduction to Coding, Object Oriented Development and .Net (C# or Core)**

## Course Snapshot

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- **Course:  TTCODE101-N  Introduction to Programming & Coding | C#.Net / .Net Core Basics for Non-Developers**
- **Duration**: 5 days
- **Audience & Skill-Level**: This is a very **basic-level** course geared for students new to programming.
- **Hands-on Learning:** This course is approximately **50% hands-on**, combining expert lecture, real-world demonstrations and group discussions with machine-based practical labs and exercises. Student machines are required.
- **Delivery Options**: This course is available for **onsite private classroom presentation**, **live online virtual presentation**, or can be presented in a **flexible blended learning format** for combined onsite and remote attendees. Please also ask about our **Self-Paced / Video / QuickSkills or Mini-Camp Flex Hours / Short Course** options.
- **Public Schedule**: This course has active dates on our live-online open enrollment **Public Schedule**.
- **Customizable**: This course agenda, topics and labs can be further adjusted to target your specific training skills objectives, tools and learning goals.  Please inquire for details.

## Programmers are in demand!

Companies are constantly challenged to keep their applications, development projects, products, services (and programmers!) up to speed with the latest industry tools, skills, technologies and practices to stay ahead in the ever-shifting markets that make up today's fiercely competitive business landscape.  The need for application, web and mobile developers and coders is seemingly endless as technologies regularly change and grow to meet the modern needs of demanding industries and clients.

There are hundreds of roles that reply on coding knowledge and programming skills.  Having programming skills can enable you to:
- Develop applications and contribute to application development projects and teams
- Integrate, change. expand or maintain outsourced development work being brought back in house
- Use or maintain software, tools, systems or networks that require coding skills to operate, handle data or complete other tasks
- Collaborate and communication more effectively with developers
- More effectively manage development teams or projects that involve programming

To meet the need to bring this knowledge and skill in house, companies might
- Locate, engage and hire experienced developers
- Outsource development work to third party firms
- Onboard new hires or recent college graduates / cohorts with limited practical experience, then train them specifically to fill these roles
- Invest in and 're-skilling' current employees into more modern and productive roles within the firm, retaining and leveraging existing company knowledge and talent.

Learning to code, even to a basic level, is a truly worthwhile investment. Having coding skills, or even basic knowledge, can elevate your ability gain a new job in programming, help you gain longer term job security in your current organization, or can even expand your current role into other areas in your team or organization.

## Overview

**Introduction to Programming & Coding | C# .Net Basics for Non-Developers** is a skills-focused, hands-on coding course that teaches students the fundamentals of programming object oriented (OO) applications with C#.Net to a basic level, using sound coding skills and best practices for OO development.  This course is presented in a way that enables interested students from any background to embrace the fundamentals of coding as well as an introduction to C#.Net and Visual Studio, in a gentle paced environment that focuses on coding basics, moving at the comfort level of the attendees.

Students are introduced to the application development cycle, structure of programs, and specific language syntax. The course also

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contains "Thinking Like a Programmer" sections that provide students insight on how to develop common algorithms. The course covers console and file I/O, string and character manipulation, managing data using collections and fundamental object-oriented programming concepts. Error handling techniques are also emphasized. The course also introduces how to access databases using .NET and illustrates how to build user interfaces using Windows Forms. Comprehensive hands on exercises are integrated throughout to reinforce learning and develop real competency.

Students will leave this course armed with the required skills to begin their journey as a .Net programmer using modern coding skills and technologies.  This course provides students with a solid foundation for continued .Net programming training and skills development.

## Learning Objectives

Working within an engaging, hands-on learning environment led by our highly-experienced coding mentors, students will learn how to:
- Using Visual Studio to create C# applications
- Working with the .NET data types
- Creating variables with the proper scope and using operators to build complex expressions
- Using control structures such as `if, while` and `for`
- Using procedures to build complex applications
- Designing and using classes
- Using arrays and .NET collections
- Throwing and trapping exceptions using the C# `try` and `catch` statements
- Using ADO.NET to access databases
- Working with files and directories
- Building simple Windows Forms applications
- Building and using derived classes
- Defining and implementing interfaces
- Performing advanced string manipulation

## Audience & Pre-Requisites

This course is intended for anyone who is new to software development and wants, or needs, to gain an understanding of the fundamentals of coding and basics of .Net and object-oriented programming concepts or anyone who wants to have a basic understanding of and learn how to code C# .Net / .Net Core applications and syntax.

Attendees might include:
- Anyone who wants exposure to basic coding skills, or who wants to begin the process of becoming an OO application developer
- Technical team members from non-development roles, re-skilling to move into software and application development roles within an organization
- Recent college graduates looking to apply their college experience to programming skills in a professional environment, or perhaps needing to learn the best practices and standards for programming within their new organization
- Technical managers tasked with overseeing programming teams, or development projects, where basic coding knowledge and exposure will be useful in project oversight or communications needs

## Pre-Requisites

Before attending this course, students must have:
- Ability to use computers to start programs, open and save files, navigate application menus and interfaces
- Ability to understand logical concepts such as comparisons
- Understand number theory
- Ability to create, understand, and follow structured directions or step-by-step procedures
- Ability to understand and apply abstract concepts to concrete examples

**Follow On Courses**:  Our Skills Academy Developer Tracks include a wide variety of follow-on courses and learning paths for leveraging Java for next-level development, testing, security and more. Please see our **Java & JEE Developer Training Suite &**

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**LearningPaths** list of courses, or inquire for recommendations based on your specific role and goals.

**Enhanced Learning Services:** Please also ask about our **Pre-Training Class OnRamp & Prep / Primer** offerings, **Skills Gap Assessment Services**, **Case Studies**, **Knowledge Check Quizzes**, **Skills Immersion Programs & Camps**, **Collaborative Mentoring Services** and **Extended Learning Support** & **Post Training** services.

## Course Topics / Agenda

*Please note that this list of topics is based on our standard course offering, evolved from typical industry uses and trends. We'll work with you to tune this course and level of coverage to target the skills you need most. Topics, agenda and labs are subject to change, and may adjust during live delivery based on audience skill-level, interests and participation.*

**Application Development Fundamentals**
- Overview of Programming Concepts
- Understanding the Structure of a C# Program
- Understanding Data Types
- Working with Variables
- Reading From and Writing to the Console
- Overview of the .NET Framework
- Using Visual Studio
- Thinking Like a Programmer
- Designing Algorithms
- Finding Patterns in Code

**Managing the Flow of an Application**
- Conditional Constructs
- Working with if/else Constructs
- Working with switch
- Looping Constructs
- Working with while Constructs
- Working with for and foreach
- Thinking Like a Programmer
- Making Decisions
- Designing Loops

**Working with Data**
- Using Integer Data Types
- Using Floating Point Data Types
- Using Characters and Strings
- Using Dates
- Using Booleans
- Working with Constants and Literals

**Using Procedures to Modularize Code**
- Defining and Calling Subroutines
- Defining and Calling Functions
- Understanding Variable Scope
- Overloading Procedures

- Passing Parameters
- Understanding by value vs by reference Parameters
- Understanding the Call Stack
- Thinking Like a Programmer
- Finding the Procedures
- Refactoring
- Improving Productivity with Snippets

**Object-Oriented Programming**
- Understanding Object-Oriented Concepts
- Designing Classes
- Coding Properties and Methods
- Initializing Objects with Constructors
- Overloading Constructors
- Declaring and Instantiating Objects
- Calling Properties and Methods
- Understanding Value Types vs. Reference Types
- Working with Shared Data Members and Methods
- Thinking Like a Programmer
- Finding your Classes

**Understanding Namespaces**
- Understanding the Role of Namespaces
- Understanding .NET Namespaces
- Defining Custom Namespaces
- Referencing Members in a Namespace
- Using the using Statement

**Working with Data Collections**
- Understanding Arrays
- Declaring and Instantiating Arrays
- Iterating through Arrays
- Working with System.Array Methods

- Copying, Sorting, Searching and Resizing
- Passing Arrays to Methods
- Working with param array Parameters
- Working with Command-line Arguments
- Understanding .NET Collections
- Managing Data Using List
- Managing Data Using Dictionary<TKey, TValue>
- Working with LINQ
- Making LINQ Queries
- Enumerating LINQ Query Results
- Working with Anonymous Types
- Using Extension Methods with LINQ

**Building Inheritance Hierarchies**
- Understanding Inheritance
- Building Derived Classes
- Understanding Constructors in Derived Classes
- Defining and Using Protected Class Members
- Understanding Polymorphism
- Defining Overridable Methods
- Overriding Methods
- Understanding Abstract Classes
- Defining Abstract Classes
- Inheriting from Abstract Classes

**Building GUIs with Windows Forms**
- Overview of Windows Forms
- Designing Forms
- Working with Controls
- Using Labels and Textboxes
- Using Buttons
- Using Checkboxes and Radio Buttons
- Using Menus
- Using List Controls

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- Handling Events

**Accessing Databases Using ADO.NET**
- Understanding the ADO.NET Object Model
- Opening Connections
- Executing Queries Using Commands
- Iterating Through Results Using DataReaders
- Calling Stored Procedures
- Passing Parameters to Stored Procedures
- Working with DataSets
- Binding Data to Controls

**Exception Handling**
- Understanding Exception Handling

- Using try/catch to Handle Exceptions
- Working with the Exception Class
- Understanding Exception Propagation
- Using finally to Manage Cleanup Processing
- Throwing Exceptions

**Working with Files, Directories and Streams**
- Using the System.IO Namespace
- Discovering Drives
- Working with Directories
- Working with Files
- Parsing a File Path
- Understanding Streams
- **Working with FileStream**
- **Reading and Writing Text Files**

- Understanding other Types of Streams

**Working with Strings**
- Working with the String Class
- Working with String Literals and Escape Sequences
- Understanding String Manipulation Performance Issues
- Working with the StringBuilder Class
- Formatting Output with String.Format

**Building N-Tier Applications**
- Building Large Scale Applications
- Designing N-Tier Applications
- Building .NET Assemblies
- Referencing Assemblies

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**Student Materials:** Each participant will receive a **Student Guide** with course notes, code samples, software tutorials, step-by-step written lab instructions, diagrams and related reference materials and resource links. Students will also receive the project files (or code, if applicable) and solutions required for the hands-on work.

**Hands-On Setup Made Simple!** Our dedicated tech team will work with you to ensure our 'easy-access' cloud-based course environment is accessible, fully-tested and verified as ready to go well in advance of the course start date, ensuring a smooth start to class and effective learning experience for all participants. Please inquire for details and options.

**For More Information**

**For more information** about our dedicated training services, collaborative coaching services, courseware licensing and development services, public course schedule, training management services, partner programs, or to see our complete list of course offerings and special offers please visit us at **www.triveratech.com**, email **Info@triveratech.com** or call us toll free at **844-475-4559.** Our pricing and services are always satisfaction guaranteed.

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