Windows Presentation Foundation Programming

Students Will Learn:

- .NET Framework Architecture
- C# Language Syntax
- Managing Run-time Exceptions
- Building WPF Applications
- Working with XAML

- Using WPF Controls
- Using Styles, Triggers and Control Templates
- Working with Modal and Modeless Forms
- Multimedia, Graphics and Animations
- Using Data Binding

Course Description: This course provides students with hands on experience using Visual Studio to create Windows Presentation Foundation (WPF) applications using C#. The class provides a thorough introduction to the C# programming language, including coverage of the essentials of the C# programming language, built in data types, operators, control structures, classes and methods, collections and exception handling.

Students then learn how to leverage the power of the .NET Framework to build WPF applications. Students learn the basics of XAML and how to use it to describe the appearance and behavior of WPF user interfaces. Students also learn how to use XAML resources to manage styles, triggers and control templates.

Students learn how use a variety of WPF controls to interact with users and manage data in multi-form applications. Students explore how to leverage the power of XAML data binding. Students also learn the basics of working with audio and images, as well as performing simple animations.

Other topics include: debugging techniques; building menus, toolbars and status bars; using the ribbon control; reading and writing files; and deploying WPF applications. Comprehensive labs and exercises provide the students with extensive experience creating and debugging WPF applications.

This course provides thorough coverage of the use of **Windows Presentation Foundation (WPF)** to build desktop applications. Students requiring additional coverage of **Windows Forms, ASP.NET Web Forms**, **ASP.NET MVC** or **Silverlight** should contact SPIRO IT

ACADEMY or refer to contact SPIRO IT ACADEMY complete course listing for additional training courses.

Course Prerequisites: Knowledge of fundamental XML syntax is helpful, but not required. Prior experience with a scripting or programming language is required.

Windows Presentation Foundation Programming Using C# Course Overview:

Introduction to .NET

- Overview of the .NET Framework
- How .NET is Different from Traditional Programming
- Common Language Runtime (CLR)
- Common Language Specification (CLS)
- Common Type System (CTS)
- .NET Assemblies
- Microsoft Intermediate Language (CIL)
- .NET Namespaces
- .NET Framework Class Library

Introduction to Visual Studio

- Creating a Project
- Using the Code Editor
- Correcting Syntax Errors
- Setting Project Properties
- Adding References
- Compiling a Program
- Running a Program
- Debugging a Program
- Using the MSDN (Help)

Language Fundamentals

- C# Program Structure
- Defining Namespaces
- Understanding C# Data Types
- Defining Variables and Constants
- Comparing Value Types versus Reference Types
- Working with Operators and Expressions
- Performing Type Conversions
- Using Console I/O
- Formatting Numbers, Date and Times

Conditionals and Looping

- if/else
- switch
- while and do/while
- for
- foreach

Methods and Parameters

- Defining Static and Instance Methods
- Passing Parameters by value and by reference
- Overloading Methods
- Using Variable Length Parameter Lists

Collections

- Defining and Using Arrays
- Understanding System.Array
- .NET Collections vs Generic Collections
- Working with Lists
- Working with Dictionaries
- Using LINQ to Objects

WPF Applications

- WPF Applications
- Types of WPF Applications
- Structure of WPF Applications
- Using the WPF Designer
- Setting Properties
- Handling Events
- Using the MessageBox Class
- Passing Command-Line Arguments
- Handling Application Lifetime Events

Exception Handling

- What are Exceptions?
- .NET Exception Hierarchy
- Catching Exceptions
- Throwing Exceptions
- Managing Resources with Finally

Object-Oriented Programming

- Overview of Object-Oriented Programming
- Building Classes
- Defining Properties
- Using Auto-Implemented Properties
- Defining Methods
- Understanding Constructors
- Extending .NET Classes via Inheritance
- Defining and Implementing Interfaces
- Understanding the Role of Interfaces in .NET

Working with XAML

- XAML vs. BAML
- Understanding XAML Markup
- XAML Elements
- XAML Namespaces
- Creating Objects using XAML
- Working with Resources
- Handling Events in XAML
- Working with Resources
- Defining and Using Styles

WPF User Interface Basics

- WPF Control Hierarchy
- Common Properties, Methods and Events
- Dependency Properties
- Configuring a Window's Properties
- Adding Controls
- Controlling the UI's Appearance
  - Managing Size
  - Managing Position
  - Managing Alignment
  - Managing Visibility
  - Using Fonts
- Working with Transformations
  - Scale Transformations
  - Rotation Transformations
  - Skew Transformations

Using XAML Layout Elements

- Overview of Layout Elements
- Using the Canvas
- Using the StackPanel
- Using the WrapPanel
- Using the Grid
- Using the UniformGrid
- Using the DockPanel
- Using the ViewBox
- Adding Scrolling Capabilities

Using WPF Controls

- Working with WPF Controls
- Using Text Controls
- Using Button Controls
- Using Selection Controls
- Using List Controls
- Using Container Controls
- Working with Routed Events

Working with Styles, Triggers and Control Templates

- Using Styles
- Working with Triggers and Multi-Triggers
- Using Control Templates

Working with WPF Windows

- Understanding Modal vs Modeless
- Displaying a Window Modally
- Retrieving Data from Modal Windows
- Creating Owned Windows
- Displaying a Window Modelessly
- Working with Data in Modeless Windows
- Using Common Dialogs
- Creating Irregularly Shaped Windows

Working with Menus, Toolbars and Status Bars

- Working with Menus
- Working with Toolbars
- Working with Status Bars
- Working with the Ribbon

Working with Multimedia

- Working with Sound
- Working with Images
- Working with Video

Working with Data Binding

- Overview of Data Binding
- Binding to Control Properties
- Binding to Data Sources
    - Binding to a List
    - Binding to an ADO.NET Object
    - Binding to an Object
    - Binding to XML
- Sorting and Filtering Data
- Using Value Converters
- Working with Change Notifications

Deploying WPF Applications

- Understanding Deployment Options
- Configuring an Application for Deployment
- Using XCOPY Deployment
- Using Installers
- Using Click-Once Deployment

Graphics and Animations

- Working with Shapes
- Working with Brushes
    - Using Solid Brushes
    - Using Gradient Brushes
- Building Simple Animations

Commands and MVVM

- Understanding Commands
- Creating Commands
- Associating Command with a Command Source
- Binding Command to Command Handlers
- The MVVM Design Pattern