

# Object-Oriented Programming in Visual Basic (VS2005) (5 Days) CTI 420

*This course teaches the fundamentals of programming in Visual Basic, using an object-oriented perspective. The course also examines the relationship between Visual Basic and the .NET Framework.*

*Prerequisites: The student must have programming experience in a high-level language.*

*Minimum software requirements: Microsoft Visual Studio 2005 on Windows XP with Service Pack 2. Visual Basic 2005 Express Edition can also be used.*

*Minimum hardware requirements for all machines: Pentium PC running at 1 GHz; 512 Mb RAM; 4 GB free hard disk space before installation; Internet access; machines must be networked.*

*Microsoft PowerPoint and Internet access on instructor's workstation for presentation purposes.*

## **Module 1: .NET: What You Need to Know**

- .NET Executables and the CLR
- A .NET Testbed for VB.NET Programming
- Visual Studio .NET

## **Module 2: Fundamentals of VB.NET**

- Program Structure
- Namespaces
- Data Types
- Variables
- Conversions
- Operators and Expressions
- Console I/O

## **Module 3: Control Structures**

- If Statement
- Select Case Statement
- Do/Loop Statement
- For/Next Statement

## **Module 4: Procedures**

- Subroutines
- Functions
- Pass-by-value vs. Pass-by-reference
- Access modifiers
- Overloading
- Optional Parameters

## **Module 5: Advanced Data Types**

- Arrays
- Enumerations
- Structures

## **Module 6: Exception Handling**

- Error Detection
- Exception Handling

## **Module 7: Object-Oriented Programming**

- Object-Oriented Concepts
- Defining Classes
- Methods and Properties
- Shared Data and Methods
- Constructors

## **Module 8: Inheritance**

- Inheritance
- Controlling Base Class Construction
- Access Control
- Polymorphism
- Events
- Abstract and Not Inheritable Classes
- Type Conversion in Inheritance

## **Module 9: Interfaces**

- Interface Fundamentals
- Programming with Interfaces
- Using Interfaces at Runtime
- Resolving Ambiguities

## **Module 10: Windows Forms**

- Building a Windows Application
- Under the Hood of a Windows Application
- Common Controls

## **Module 11: User Interface Features**

- Dialog Boxes
- Menus
- Status Bars
- Toolbars

## **Module 12: Interacting with Databases Using Windows Forms**

- ADO.NET
- Building Commands and Adapters with Wizards
- DataSet
- DataGrid
- Binding a Control to a Dataset

## **Module 13: New Features in VB.NET 2.0**

- Visual Studio 2005
- Partial Classes
- Generic Types
- Continue Statement
- IsNot Operator
- Operator Overloading
- Properties with Mixed Access Levels
- Built-In My Object
- Other New Features

## **Appendix A: Using Visual Studio .NET**

- Overview of Visual Studio .NET
- Creating a Console Application
- Project Configurations
- Debugging