



## Object-Oriented Programming in VB.NET (BDT4201) 5 days

### Course Description

.NET is a revolutionary advance in programming technology that greatly simplifies application development. Microsoft's popular Visual Basic programming language has been upgraded to take advantage of the new .NET features. Visual Basic has become a fully object-oriented programming language with capabilities comparable to C++, Java, and Microsoft's new language C#.

This course is a practical introduction to programming in Visual Basic and the use of services provided by .NET. It emphasizes the Visual Basic language and how to build Visual Basic applications from an object-oriented perspective. Knowledge of the earlier version of the language, Visual Basic 6, is not required. It is current to Visual Studio 2008 and .NET 3.5, which introduces important new features such as local type inference, extension methods, lambda expressions and Language-Integrated Query (LINQ). The new features are covered in a new chapter.

One of the strengths of Visual Basic, and the reason it has enjoyed such widespread use, is the ease with which Windows application can be developed. Microsoft has revamped the way that Windows applications are built under .NET. Windows Forms, used by .NET languages, represents a class library that brings uniformity to the components of a Windows application. The course includes substantial coverage of using Windows Forms in Visual Basic, including creating database applications with ADO.NET.

### Learning Objectives

- Gain an understanding of the .NET architecture
- Gain a working knowledge of the Visual Basic programming language
- Learn how to build object-oriented applications using Visual Basic
- Learn how to implement Windows desktop applications using Windows Forms, including programs that interact with databases
- Gain a working knowledge of local type inference, object initializers, anonymous types, extension methods, lambda expression, LINQ, and other new features in Visual Basic 2008.

**Course Duration:** 5 days

**Prerequisites:** The student should have some programming experience.



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### Course Outline

1. .NET: What You Need To Know
  - A. .NET Executables and the CLR
  - B. A .NET Testbed for Visual Basic Programming
  - C. Visual Studio 2008
  
2. Fundamentals of Visual Basic Programming
  - A. Program Structure
  - B. Namespaces
  - C. Data Types
  - D. Variables
  - E. Conversions
  - F. Operators and Expressions
  - G. Console I/O
  
3. Control Structures
  - A. If Statement
  - B. Select Case Statement
  - C. Do/Loop Statement
  - D. For/Next Statement
  - E. Exit and Continue
  
4. Procedures
  - A. Subroutines
  - B. Functions
  - C. Pass-by-value Versus Pass-by-reference
  - D. Access modifiers
  - E. Overloading
  - F. Optional Parameters
  
5. Advanced Data Types
  - A. Arrays
  - B. Enumerations
  - C. Structures
  
6. Exception Handling
  - A. Error Detection
  - B. Exception Handling



## Object-Oriented Programming in VB.NET (BDT4201) 5 days

7. Object-Oriented Programming
  - A. Object-Oriented Concepts
  - B. Defining Classes
  - C. Methods and Properties
  - D. Shared Data and Methods
  - E. Constructors
  
8. Inheritance
  - A. Inheritance
  - B. Controlling Base Class Construction
  - C. Access Control
  - D. Polymorphism
  - E. Events
  - F. Abstract and Not Inheritable Classes
  - G. Type Conversion in Inheritance
  
9. Interfaces and Collections
  - A. Interface Fundamentals
  - B. Programming with Interfaces
  - C. Using Interfaces at Runtime
  - D. Resolving Ambiguities
  - E. Collections
  - F. Generic Types
  - G. Type-Safe Collections
  
10. Introduction to Windows Forms
  - A. Creating Windows Applications Using Visual Studio 2008
  - B. Partial Classes
  - C. Handling Events
  - D. Common Controls
  
11. Windows Forms Controls
  - A. Buttons, Labels and Textboxes
  - B. Radio Buttons and Group Boxes
  - C. Check Boxes
  - D. List Boxes and Combo Boxes
  - E. Timer Control
  - F. Flexible Event Handling
  
12. User Interface Features
  - A. Dialog Boxes
  - B. Menus



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### 13. Database Programming

- A. ADO.NET
- B. .NET Data Providers
- C. Using Data Readers
- D. Using Data Sets
- E. .NET 2.0 Data Binding

### 14. New Features in Visual Basic 2008

- A. Local Type Inference
- B. Object Initializers
- C. Array Initializers
- D. Anonymous Types
- E. Partial Methods
- F. Extension Methods
- G. Lambda Expressions
- H. Query Keywords

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