



## DUNN Training and Consulting

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## OBJECTIVES

The fundamentals of object oriented development are often assumed in many training classes. Design Patterns are now a method of communication between developers and something critical to our vocabulary. The goal of this course is to equip you with both. The course uses Visual Basic .NET to cover object oriented development on the .NET platform.

## EXPERIENCE

Students should be familiar with a programming language such as BASIC, C, or Cobol. General knowledge of structured programming concepts is required.

## CLASS OUTLINE

- Object Oriented Design
  - Gathering Requirements
  - Analysis
  - Conceptual, Logical and Physical Design
  - Unified Modeling Language (UML) Primer
- Object Oriented Fundamentals
  - Defining a Class
    - Fields
    - Properties
    - Methods

- Events
- Accessors and Scope
  - Public
  - Private
  - Friend/Internal
  - Protected
- Constructors
- Finalizers
- Static/Shared Properties and Methods
- Inheritance
  - Single vs. Multiple Inheritance
  - Overloading
    - Constructors
    - Methods
  - Overriding
    - Properties
    - Methods
- Interfaces
  - Implements
  - Abstract Classes
  - Uses throughout the .NET Framework
- Polymorphism
  - Inheritance Based
  - Interface Based

- Casting
- Building Reusable Components
  - Best Practices for Solution/Project Setup
  - Using Namespaces
  - Documenting a component/Object Browser
  - Designing an Object Model
  - Error Handling
  - Extending Components
- Design Patterns
  - What are design patterns?
  - The Gang of Four
  - Pattern categories
    - Creational
      - Singleton
      - Factory Method
      - Builder
    - Behavioral
      - Command
      - Strategy
      - Chain of Responsibility
    - Structural
      - Decorator
      - Bridge
      - Flyweight

- Architecture & N-Tier Design
  - Benefits
  - Identifying Commonalities
    - Building a Data Abstraction Layer (DAL)
    - Building a Business Object Layer
  - Service Orientation
    - Service Layers (Web Services and WCF)
    - Proxy Layers
    - OOP in the SOA world
  - Working with Business Rules and Validation
  - Working with Multiple User Interfaces (Web vs. Windows)
- Techniques for Testing and Debugging
  - Building Test Harnesses
  - Unit Testing
  - Getting the most out of the Visual Studio Debugger
- Code Generation
  - Tenets of code-generation
  - Generating data access layers
  - Generating business layers
  - Generating service layers
  - Additional code-gen topics
- Extensibility
  - Identifying points of extensibility
  - Patterns for extensibility
  - Enhancing applications with an extensible architecture

Using Frameworks

- Benefits
- Goals
- The CSLA Framework as an Example