

**Custom Training Institute**  
9085 Coyote Springs Road  
Prescott Valley, AZ 86314  
(928) 772-3811  
FAX (928) 441-6444

## **ADO.NET Using C# (CTI 413)**

*This course is an introduction to developing effective database applications using ADO.NET and C#. It is current to .NET 2.0, Visual Studio 2005 and SQL Server 2005.*

*Prerequisites: Basic knowledge of SQL and of programming the .NET Framework using C#; understanding of fundamentals of XML. Able to write simple Windows Forms applications. Working knowledge of SQL Server is desirable.*

*Minimum software requirements: Microsoft Windows XP Professional with Service Pack 2, SQL Server 2005 Express Edition, Visual Studio.NET 2005 or Visual C# 2005 Express Edition.*

*Minimum hardware requirements for all machines: Pentium PC running at 600 MHz; 256 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: Introduction to ADO.NET**

- Microsoft Data Access Technologies
- From ADO to ADO.NET
- ADO.NET Architecture
- Namespaces and Classes
- Interfaces
- DataSets and Disconnected Access
- First ADO.NET Programs
- Acme Computer Case Study

### **Module 2: ADO.NET Connections**

- .NET Data Providers
- SqlConnection
- Connection Classes
- Connection Strings
- Connection Pooling
- Connection Events
- Error Handling

### **Module 3: ADO.NET Commands**

- IDbCommand
- Command Objects
- Creating Commands
- Executing Commands
- Parameterized Queries
- Command Types
- Using Stored Procedures
- Batch Queries

### **Module 4: DataReaders and Connected Access**

- DataReaders
- IDataReader
- IDataRecord
- Type-Safe Accessors
- Null Columns
- ExecuteReader Options
- Multiple Result Sets
- Obtaining Schema Information

### **Module 5: Data Sets and Disconnected Access**

- DataSet
- DataAdapter
- Command Objects
- DataTable
- DataColumn
- DataRow
- Row States and Versions
- Accept or Reject Changes
- DataTable Events
- Updating a Database from a DataSet
- Command Builders

### **Module 6: More About DataSets**

- Filtering DataTables
- Multiple Table DataSets
- Schema
- Constraints
- Relations
- Navigating a DataSet
- DataMapping
- Creating a DataSet Programmatically

## **ADO.NET Using C# (CTI 413-2) - continued**

### **Module 7: XML and ADO.NET**

Strong Coupling Between ADO.NET and XML

Rendering XML from a DataSet

Controlling XML Output

Reading XML into a DataSet

XML Schema and DataSets

Typed DataSets

Table Adapters

Synchronizing DataSets and XML

XML Serialization

### **Module 8: DataBinding**

Data Binding in Windows Forms

Simple Data Binding

Complex Data Binding

DataGrid Binding

DataGridView

Filtering and Sorting

Data Binding with .NET 2.0

### **Module 9: Concurrency and Transactions**

DataSets and Concurrency

Optimistic Concurrency

Pessimistic Concurrency

Handling Concurrency Violations

ADO.NET Transactions

Database Transactions

### **Module 10: New Features in ADO.NET 2.0**

Asynchronous Database Operations

Server Enumeration

Multiple Active Result Sets

Bulk Copy in ADO.NET

### **Appendix A. Acme Computer Case Study**

### **Appendix B. Learning Resources**