

**Price:** R14,800.00 excl. VAT  
**Duration:** 5 days  
**Delivery:** Virtual classroom or  
on-site training

## Advanced C# Programming

*Available on request for group bookings only*

### Description

This course will take you to the next level as a C# programmer. You will learn more advanced features of the C# programming language and the .NET framework, including threads, collections, web services, XML and security.

### Objectives

After you have completed the Advanced C# Programming course, you will be able to:

- Understand advanced C# language features.
- Apply advanced object-oriented principles in your C# code.
- Apply file access and serialization concepts.
- Develop multi-threaded applications in C#.
- Use ADO.NET to develop database applications.
- Understand .NET interoperability services and security.

### Intended Audience

You should attend the Advanced C# Programming course if:

- You are a C# programmer and you want to learn about the advanced aspects of the C# language.
- You are a C# programmer and you want to learn to write better C# code.

### Prerequisites

Before you attend the Advanced C# Programming course:

- You must have attended our C# Programming course or already be comfortable with the fundamentals of the C# programming language.
- You should have at least 6 months practical experience programming in C#.

### Course Contents

#### **Overview**

- Review of the .NET platform and the C# language.
- Portability issues.

#### **Object-Oriented Programming**

- Class hierarchies.
- Partial classes.
- Cross-language inheritance.
- Abstract classes.
- Sealed classes.

- Overriding System.Object Methods.
- Reference types.
- Casting & conversions.
- Constructors.
- Interfaces.

### **Collections, Structs and Enums**

- .NET Collections.
- Ordered vs. unordered collections.
- Object-based classes.
- Generic collections.
- Using Structs.
- Using Enums.

### **Operator Overloading**

- Overloading mathematical, comparison, conversion operators.
- Overloading ToString.
- Overloading GetHashCode.

### **Reflection and Attributes**

- Intrinsic attributes.
- Custom attributes.
- Reflection concepts.
- Extracting type information.
- Using reflection at runtime.

### **File Access and Serialization**

- Manipulating files and directories.
- Readers and writers.
- Serialization I/O concepts.
- Stream objects.
- Object serialization.

### **Multithreading in .NET**

- Creating threads.
- Thread management.
- Thread synchronization.
- Thread interoperability.
- The Thread and ThreadPool classes.

### **Delegates and Events**

- Callbacks & delegates.

- Single-cast vs. multi-cast delegates.
- Delegate types.
- Usynchronous vs. asynchronous delegates.
- Custom events.

#### **ADO.NET**

- The ADO.NET object model.
- Connected vs. disconnected access.
- Connection pooling.
- Stored procedures.
- Transactions.
- Binding data to controls.
- LINQ and SQL.

#### **.NET Interoperability Services**

- Interactions between managed and unmanaged code.
- Marshalling data.
- PInvoke.
- Callable wrappers.
- Interop marshalling.

#### **Miscellaneous**

- Security concepts.
- Role-Based security.
- Code Access security.
- Security policy.
- XML schemas.
- XmlReaders and XmlWriters.
- XmlDocuments.
- LINQ and XML.

*\*\* The lecturer reserves the right to modify the contents of the course to suit the needs of the delegates.*