

Course Description

This course provides an introduction to computer programming and will use the C# language for samples and labs. Students will learn core programming concepts with a focus on being able to apply these concepts to writing their own programs in C#.

Course Outline

Module 1: Introduction to Object-Oriented Programming

- Introduction to Complex Structures
- Introduction to Structs
- Introduction to Classes
- Introducing Encapsulation

Module 2: More Object-Oriented Programming

- Introduction to Inheritance
- Introduction to Polymorphism
- Introduction to the .NET Framework and the Base Class Library

Module 3: Introduction to Application Security

- Authentication and Authorization
- Code Permissions on Computers
- Introducing Code Signing

After completing this module, students will be able to:

- Describe how authorization and authentication work
- Describe how to apply access permissions for executing code on a computer
- Explain how code signing Works

Module 4: Introduction to Core Programming Concepts

- Computer Data Storage and Processing
- Application Types
- Application Life-Cycle
- Code Compilation

Module 5: Core Programming Language Concepts

- Syntax
- Data Types
- Variables and Constants

Module 6: Program Flow

- Introduction to Structured Programming Concepts
- Introduction to Branching
- Using Functions
- Using Decision Structures
- Introducing Repetition

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Introduction to Programming

5 DAYS

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Module 7: Algorithms and Data Structures

- Understand How to Write Pseudo Code
- Algorithm Examples
- Introduction to Data Structures

Module 8: Error Handling and Debugging

- Introduction to Program Errors
- Introduction to Structured Error Handling
- Introduction to Debugging in Visual Studio

Module 9: Core I/O Programming

- Using Console I/O
- Using File I/O

Module 10: Application Performance and Memory Management

- Value Types vs Reference Types
- Converting Types
- The Garbage Collector