

# C++ Beginner

## C++ Beginner

Learn one of the most popular and widely-used languages in the world. Learn Object-Orientation and if you are interested in the international exam, our syllabus covers it.

## Prerequisites

You should not be a complete beginner for this course. If you cannot [pass this test](#), you must do [Intro To Programming](#) first.

## Alignment

C++ Certified Associate Programmer (CAP) from the C++ Institute

## Further Training

[C++ Advanced](#)

## Course Material

Included

## Course Contents

## DAY 1:

### Setting Out to C++

- C++ Initiation
- C++ Statements
- More C++ Statements
- Functions
- Summary
- Chapter Review
- Programming Exercises

## **Dealing with Data**

- Simple Variables
- The const Qualifier
- Floating-Point Numbers
- C++ Arithmetic Operators

## **Compound Types**

- Introducing Arrays
- Strings
- Introducing the string Class
- Introducing Structures
- Unions
- Enumerations
- Pointers and the Free Store
- Pointers, Arrays, and Pointer Arithmetic
- Combinations of Types
- Array Alternatives

## **Loops and Relational Expressions**

- Introducing for Loops
- The while Loop
- The do while Loop
- The Range-Based for Loop (C++11)
- Loops and Text Input
- Nested Loops and Two-Dimensional Arrays
- Summary
- Chapter Review
- Programming Exercises

# **DAY 2:**

## **Branching Statements and Logical Operators**

- The if Statement
- Logical Expressions
- The ctype Library of Character Functions

- The ?: Operator
- The switch Statement
- The break and continue Statements
- Number-Reading Loops
- Simple File Input/Output

## **Functions: C++'s Programming Modules**

- Function Review
- Function Arguments and Passing by Value
- Functions and Arrays
- Functions and Two-Dimensional Arrays
- Functions and C-Style Strings
- Functions and Structures
- Functions and string Class Objects
- Functions and array Objects
- Recursion
- Pointers to Functions

## **Adventures in Functions**

- C++ Inline Functions
- Reference Variables
- Default Arguments
- Function Overloading
- Function Templates

## **Memory Models and Namespaces**

- Separate Compilation
- Storage Duration, Scope, and Linkage
- Namespaces

# **DAY 3:**

## **Objects and Classes**

- Procedural and Object-Oriented Programming
- Abstraction and Classes

- Class Constructors and Destructors
- Knowing Your Objects: The this Pointer
- An Array of Object
- Class Scope
- Abstract Data Types

## **Working with Classes**

- Operator Overloading
- Time on Our Hands: Developing an Operator
- Overloading Example
- Introducing Friends
- Overloaded Operators: Member Versus Nonmember
- Functions
- More Overloading: A Vector Class
- Automatic Conversions and Type Casts for Classes

## **Classes and Dynamic Memory Allocation**

- Dynamic Memory and Classes
- The New, Improved String Class
- Things to Remember When Using new
- in Constructors
- Observations About Returning Objects
- Using Pointers to Objects
- Reviewing Techniques
- A Queue Simulation

## **Class Inheritance**

- Beginning with a Simple Base Class
- Inheritance: An Is-a Relationship
- Polymorphic Public Inheritance
- Static and Dynamic Binding
- Access Control: protected
- Abstract Base Classes
- Inheritance and Dynamic Memory Allocation
- Class Design Review

# DAY 4:

## Reusing Code in C++

- Classes with Object Members
- Private Inheritance
- Multiple Inheritance
- Class Templates

## Friends, Exceptions, and More

- Friends
- Nested Classes
- Exceptions
- Runtime Type Identification
- Type Cast Operators

## The string Class and the Standard

- Template Library
- The string Class
- Smart Pointer Template Classes
- The Standard Template Library
- Generic Programming
- Function Objects (a.k.a. Functors)
- Algorithms
- Other Libraries

## Input, Output, and Files

- An Overview of C++ Input and Output
- Output with cout
- Input with cin
- File Input and Output
- Incore Formatting

# DAY 5:

## Visiting with the New C++ Standard

- C++11 Features Revisited
- Move Semantics and the Rvalue Reference
- New Class Features
- Lambda Functions
- Wrappers
- Variadic Templates
- More C++11 Features
- Language Change

## PROJECT

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## Duration and pricing

In [Price Group B](#)

## Certificate

1. Upon completion of this course we will issue you with attendance certificate to certify your attendance and / or completion of the prescribed minimum examples.
2. You may sit for our competency assessment test and on passing you will obtain our competency certificate.
3. Our competency assessment can be booked and taken by someone who has not attended the course at a cost of R3500.
4. We will assist you to enroll on the [C++ Institute's website](#) and may sit for the international exam in C++ (not included in our course price)

## Bookings

You can download the course registration form on our home page or by clicking [here](#)

## **Brochure**

You may download a pdf copy of this page by clicking on the pdf icon at the top of the page.

## **Questions**

Please [email us](#)

## **Schedule**

On the calendar below. If your browser doesn't display the calendar below, please click on [this link](#) or try using [Google Chrome](#), alternatively please enquire via our [Contact Us](#) page.