



(A Venture of Chandigarh ETC Services Pvt. Ltd.)

An ISO 9001:2015 Certified Organisation with Completely Online Management System

Website : www.citcchandigarh.com

Course Syllabus: Certificate in C, C++

Batch Name: Certificate in C, C++

Eligibility: 10th

Course Start: 1st of Every Month

Course Duration: 45Hours

Module 1:

Paper 1	Paper 2
Language C	Language C++

Module 1:

Paper 1: Language C

1: Introduction of C

- 1.1 History
- 1.2 Why C language
- 1.3 Getting started with C
- 1.4 Writing first program: hello world
- 1.5 Algorithm and flowchart
- 1.6 Understanding the structure and syntax of C
- 1.7 C programming style

- Return type with no arguments
- No return type with arguments
- Return type with arguments
- 5.4 Need of functions
- 5.5 Scope rules
- 5.6 Recursion
- 5.7 Function using arguments
 - Call by value
 - Call by reference

- Passing structure variable as an argument
- Passing structures pointer as an argument
- 8.8 Array within structure
- 8.9 Nested structure
- 8.10 typedef keyword
 - Typedef vs #define

2: Fundamentals of C

- 2.1 Introduction
- 2.2 Character set
- 2.3 Keywords
- 2.4 Identifiers
- 2.5 Variables
- 2.6 Data types
- 2.7 Constants
- 2.8 Declaring a keyword
- 2.9 Reading data from keyboard

6: Array in C

- 6.1 Introduction
 - Declaration of Array
 - Initializing an array
 - Accessing an Array
- 6.2 One-dimensional array
- 6.3 Two-dimensional array
 - Nesting of loops
- 6.4 Multi-dimensional array
- 6.5 Dynamic Array

9: Union in C

- 9.1 Introduction
- 9.2 Declaration of union
- 9.3 Accessing union member
- 9.4 Bit field

10: Input and output

- 10.1 Introduction
- 10.2 Standard files
- 10.3 Formatted input output
 - scanf()
 - printf()
- 10.4 Unformatted input output
 - getchar()
 - Getch()
 - gets()
 - putchar()
 - puts()
- 10.5 Error Handling
 - errno
 - strerror
 - Perror

3: Operators and expressions

- 3.1 Introduction
- 3.2 Arithmetic operator
- 3.3 Increment and Decrement operator
- 3.4 Assignment operator
- 3.5 Relational operator
- 3.6 Logical operator
- 3.7 Conditional operator
- 3.8 Bitwise operator
- 3.9 Special operators

7: Pointers in C

- 7.1 Introduction
- 7.2 Declaration of pointers
- 7.3 Initialization of pointers
- 7.4 Accessing variable through pointer
- 7.5 Pointer to a pointer
 - Declaring a double pointer
- 7.6 Operation on pointer
 - Increment and decrement operator
 - Addition and subtractions of constant value
 - Subtracting two pointers
 - Comparison between two pointers
- 7.7 Pointer to array
- 7.8 Array to pointer
- 7.9 Passing pointer as a function
- 7.10 Pointer to structure
 - Pointer pointing to a function

11: File I/O

- 11.1 Introduction
- 11.2 Needs of files
- 11.3 Types of files
 - Text files
 - Binary files
- 11.4 Files operations
 - File creation
 - Opening a file
 - Reading data from file
 - Writing data to file
 - Closing a file
- 11.5 Reading writing text files
 - getc()
 - putc()
 - getw()
 - putw()
 - getchar()
 - putchar()
 - fprintf()
 - fscanf()
- 11.6 Reading writing binary files
 - fread()
 - fwrite()

4: Control Statements

- 4.1 Introduction
- 4.2 Branching statements
 - If
 - Nested if
 - If else
 - Nested if else
- 4.3 Looping statement
 - For loop
 - While loop
 - Do while loop
- 4.4 Jumping statement
 - Goto
 - Break
 - Continue

8: Structures in C

- 8.1 Introduction
- 8.2 Defining a structure
- 8.3 Declaring a structure member
 - Declaring structure variable separately
 - Declaring structure variable along with definition
- 8.4 Accessing structure member
 - With Dot operator
 - With arrow operator
- 8.5 Structure initialization
- 8.6 Array of structure
- 8.7 Using structure as a function argument
 - Passing structure member as an argument

5: Function in C

- 5.1 Introduction
- 5.2 Types of functions
- 5.3 Types of user define functions
 - No return type with no arguments

Paper 2: Language C++

1: Introduction of C++

- 1.1 History
- 1.2 Why Java language
- 1.3 Getting started with C++
- 1.4 Writing first program: hello world
- 1.5 Algorithm and flowchart
- 1.6 Understanding the structure and syntax of C++
- 1.7 C++ programming style

2: Principle of OOP

- 2.1 Introduction to OOP
- 2.2 OOP vs Procedural oriented programming
- 2.3 objects
- 2.4 Classes
- 2.5 Encapsulation
- 2.6 Abstraction
- 2.7 Polymorphism
- 2.8 Inheritance
- 2.9 Applications of OOP

3: Operators in C++

- 3.1 Introduction to operators
- 3.2 Special operators
- 3.3 scope resolution operator
- 3.4 Member dereferencing operator
- 3.5 Memory management operator
- 3.6 Manipulators and Typecast operator

4: variables and Functions in C++

- 4.1 Introduction
- 4.2 Functions
 - Devlaration
 - Definition
- 4.3 Variables
 - Declaration
 - Scope of variables
- 4.4 Arrays and Strings

5: Classes and Objects

- 5.1 Introduction
- 5.2 Declaring a Class
 - Data members
 - Member function
 - Private and public members
 - Accessing member functions
- 5.3 Functions
 - Class function definition
 - Member function definition
- 5.4 Objects
 - Creating an object
 - Accessing members using objects
- 5.5 Object as a function argument
 - Pass by value
 - Pass by reference

6: Operator Overloading

- 6.1 Introduction
- 6.2 Operator Overloading Methods
- 5.3 Type Conversion

7: Constructors in C++

- 7.1 Introduction
- 7.2 Declaration of Constructor
- 7.3 Definition of Constructor
- 7.4 Types of Constructor
 - Default Constructor
 - Parameterized Constructor
 - Copy Constructor
- 7.5 Destructor
 - Definition
 - Use of Destructor

8: Inheritance

- 8.1 Introduction
- 8.2 Base Class and Derived Class
- 8.3 Visibility Mode
 - Private
 - Public
 - Protected

- 8.4 Types of Inheritance
 - Single inheritance
 - Multilevel inheritance
 - Multiple Inheritance
 - Hierarchal Inheritance
 - Hybrid inheritance
- 8.5 Nesting of Classes

9: Polymorphism

- 9.1 Introduction
- 9.2 Application and Demonstration
- 9.3 Early Binding
- 9.4 Polymorphism with pointers
- 9.5 Early Binding
- 9.6 Late Binding
- 9.7 Virtual Functions
- 9.8 Pure Virtual Functions

10: Exception Handling

- 10.1 Introduction
- 10.2 Exception handling mechanism
 - Throw an Exception
 - Catch an Exception
 - Rethrow an Exception

11: Input and Output in C++

- 11.1 Introduction
- 11.2 Standard Streams
- 11.3 Manipulators
- 11.4 Unformatted Input
- 11.5 Unformatted Output

12: File Processing

- 12.1 Introduction
- 12.2 Opening and Closing of file
- 12.3 Binary File Operations
- 12.4 Structures and file operations
- 12.4 Classes and File operations
- 12.5 Random File Processing

