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# **SIT INTERNATIONAL<sup>TM</sup>**

*SMARTBTR INSTITUTE OF TECHNOLOGY INTERNATIONAL*



**GOSSAIGAON, KOKRAJHAR BTR ASSAM**



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# Course Title : Core C++ Programming

**Course Duration: 4 months**

**Course Fees: INR. : Rs. 4,000**

**Eligibility: 10th passed**

**Prerequisites: No experience required**

## TOPICS

1. Getting Started
2. Fundamentals
3. Operators
4. Control Statements
5. Arrays & Vector
6. Functions
7. Class Structure in C++
8. Introduction to classes and objects
9. Loop
10. Exception
11. Pointers
12. File input output
13. Inheritance and polymorphism
14. Object Oriented Programming (OOPS) Concept
15. Basic Fundamental of Data Structure

### Session-1: Getting Started

- Install tools and software, Getting Started code with IDE

### Session-2: Fundamentals

- Quick print out, Variables and Data Types (Part 1), Variables and Data Types (Part 2), Variables and Data Types (Part 3), Data types, Comments, Symbolic Constants and Naming Conventions, User Input, Project - Average of Three, Fundamentals Quiz, Section Wrap-Up

### Session-3 Operators

- Type of Operators, Discussion about operators Arithmetic Operators, Relational Operators, Logical Operators, Real world usecase example of operator

### Session-4: Control Statements:

- Section Overview, Introduction to Control Statements, Selection Control Statements, Repetition Control Statements, Break and Continue, Random Numbers (Side Topic, Project - Odds and Evens, Project - Guess the Number, Control Statements Quiz, Section Wrap-Up

### Session- 5: Arrays & Vector

- Section Overview, Built-in Arrays, The Array Class, The Vector Class, Multi-dimensional Arrays, Project - Array Data, Vector Data, Parallel Arrays/Vectors, Arrays and Vectors Quiz, Section Wrap-Up

### Session-6: Functions :

- Section Overview, Function Prototypes and Definitions, Function Return Types and Parameters, Parameter Passing: Pass-by-Value and Pass-by-Reference, Variable Scope and Lifetime, Function Overloading, Recursion, Project - Return the Product of Three Parameters, Project - Return the Sum of Built-in Array Elements, Project - Return the Sum of Array Object Elements, Functions Quiz, Section Wrap-Up

### Session-7: Class Structure in C++

- Class definition, maintain classes in our programs, Class Structure in C++, More on Classes

### Session-8: Introduction to classes and objects

- Section Overview, Basics of OOP,
- Creating Classes and their objects, Object Creation steps in c++,
- Encapsulation: Data Members and Member Functions, Separate Compilation, Constructors and Destructors, A Rectangle Class, A Book Class, Project - A Bank Account Class, Custom classes and objects, Project - A Pizza Class, Project - A Circle Class, Introduction to Classes and Objects, Quiz, Section Wrap-Up

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## Session-9: Loop

- Loop Code Structure, While loop, for loop, for each loop

## Session-10: Exception

- Section Overview, Exceptions and the Exception Hierarchy, Logic Errors, Runtime Errors and Throwing Exceptions, Rethrowing Exceptions, Custom Exceptions, Testing and Debugging, Project - Throwing and Handling an out\_of\_range Exception, Project - Creating and Using Your Own Exception, Exceptions and Debugging Quiz, Section Wrap-Up

## Session-11: Pointers

- Section Overview, Introduction to Pointers, Dynamic Memory (Part 1), Dynamic Memory (Part 2), Const Correctness, Pointers Quiz, Section Wrap-Up

## Session-12: File input output

- Section Overview, Sequential File Output, Sequential File Input, More File I/O, File Input and Output Quiz, Section Wrap-Up

## Session-13: Inheritance and polymorphism

- Section Overview, Sequential File Output, Sequential File Input, More File I/O, File Input and Output Quiz, Section Wrap-Up

## Session-14: Object Oriented Programming (OOPS) Concept

- Object Oriented Programming, More on Inheritance, polymorphism, Encapsulation, Parent Child Class

## Session- 15: Basic Fundamental of Data Structure

- Data Structure overview, types of data structure, basic data structure like array, linkedlist, map, set queue, stack, Write programme to understand this data structures

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