

C++ Programming for College Students

Learn C++ from fundamentals to object-oriented programming through practical coding.

DURATION	SESSIONS	TRAINING HOURS
About 10 weeks	40 one-hour sessions	40 hours
MODE	LEVEL	INCLUDES
Live online, instructor-led	Beginner	Assignments, mini project

What you will learn

- Understand C++ syntax and program structure
- Work with variables, data types, operators, and input/output
- Use conditional statements and loops
- Write reusable programs using functions
- Work with arrays and strings
- Understand pointers and references
- Create classes and objects
- Understand constructors and destructors
- Apply inheritance and polymorphism
- Understand function and operator overloading
- Work with file handling
- Handle exceptions in C++
- Understand basic C++ Standard Library concepts
- Build small C++ applications independently

Curriculum

Ten modules of four one-hour sessions each, from your first C++ program to object-oriented design, templates, files and modern C++. Every module mixes concepts with hands-on coding, and the course ends with a mini project and a final assessment.

Module 1 C++ Foundations

- 1 Introduction to C++ and development environment setup
- 2 Program structure, comments, input and output with cin/cout
- 3 Variables, constants, data types and type conversion
- 4 Operators and expressions

Module 2 Control Flow

- 5 Conditional statements: if, if-else and nested if
- 6 switch statement and conditional operator
- 7 Loops: for, while and do-while
- 8 Nested loops, break, continue and pattern programs

Module 3 Functions and Program Structure

- 9 Defining and calling functions
- 10 Function parameters: value, reference and const reference
- 11 Function overloading, default arguments and inline functions
- 12 Scope, lifetime, storage classes and recursion basics

Module 4 Arrays and Strings

- 13 One-dimensional arrays
- 14 Two-dimensional and multidimensional arrays
- 15 Character arrays and C-style strings
- 16 `std::string` and string operations

Module 5 Pointers and Memory

- 17 Introduction to pointers and memory addresses
- 18 Pointers with arrays, strings and functions
- 19 Dynamic memory allocation with `new` and `delete`
- 20 References, const correctness and common pointer mistakes

Module 6 Object-Oriented Programming - Basics

- 21 Classes, objects and access specifiers
- 22 Constructors, constructor overloading and destructors
- 23 Encapsulation, getters, setters and the `this` pointer
- 24 Static data members, static functions and friend functions

Module 7 Object-Oriented Programming - Advanced

- 25 Inheritance and protected members
- 26 Types of inheritance and constructor execution order
- 27 Polymorphism and virtual functions
- 28 Pure virtual functions and abstract classes

Module 8 Advanced C++ Language Features

- 29 Operator overloading
- 30 Function templates
- 31 Class templates
- 32 Namespaces, header files and multi-file programs

Module 9 Files, Exceptions and Modern C++

- 33 File handling: reading and writing text files
- 34 Exception handling with try, throw and catch
- 35 Modern C++ basics: auto, range-based for loop and nullptr
- 36 Lambda expressions and smart pointers overview

Module 10 Applied C++ and Assessment

- 37 Structures, enumerations and type aliases
- 38 Debugging, code quality and common C++ errors
- 39 Mini project: design and implementation
- 40 Mini project review and final programming assessment

How you learn

- Live instructor-led sessions
- Hands-on coding demonstrations
- Practical programming exercises
- Regular assignments
- Coding practice
- Mini project
- Final assessment

Who should enrol

- BE / B.Tech students
- BCA students
- BSc Computer Science / IT students
- MCA students
- Beginners who want to learn programming using C++
- Students who want a strong C++ foundation before learning DSA

Prerequisites

No prior programming experience is required. Basic computer knowledge and a willingness to practice coding regularly are sufficient.

Course completion

Students who complete the training, assignments, the mini project and the final assessment receive a course completion certificate through GeeksArray.

Questions about batch dates, timings, fees or anything else?

Contact the course coordinator, **Kaumodini Kedar** · WhatsApp **+91 91726 23305**

Or see the course page on [geeksarray.com](https://www.geeksarray.com).