

Introduction to C++ Programming Syllabus

Course Overview

A practical, hands-on introduction to modern C++ programming designed for beginners and intermediate learners. Students will learn to write, test, and debug C++ programs through guided exercises and a final project that demonstrates real-world problem-solving skills.

Course Details

- **Duration:** 1 Month
- **Sessions:** 8 Sessions (2 per week × 40 minutes each)
- **Mode:** Online (students use their own laptops)
- **Language of Instruction:** English
- **Recommended Tools:** Code::Blocks (preferred) or OnlineGDB (web-based)

<https://dapgcdn.com/download/devtools/code-blocks?get=codeblocks-25.03mingw-setup.exe>

- **Teaching Method:** Practical coding sessions, individual exercises, and a final project presentation

Learning Outcomes

By the end of this course, students will be able to:

- Write and execute basic to intermediate C++ programs
- Use variables, constants, operators, and expressions correctly
- Implement input/output operations using cin and cout
- Apply conditional statements and loops to control program flow
- Create and use functions, arrays, and strings
- Apply object-oriented programming concepts such as classes, objects, constructors, and destructors
- Perform basic file input/output operations
- Develop and present a complete mini-project using learned concepts

Assessment Structure

- **Exercises:** 40% — Individual practice after each session
- **Mini Project:** 40% — Practical project integrating course concepts
- **Participation & Presentation:** 20% — Engagement and project presentation in the final session

Weekly Plan (8 Sessions × 40 Minutes)

Week 1

Session 1 — Introduction to C++

Overview of C++, program structure, writing the first program, understanding cout, cin, and comments.

Session 2 — Variables, Data Types & Operators

Identifiers, constants, primitive data types, arithmetic and logical operators, and type casting.

Week 2

Session 3 — Decision Making

Using if, else if, else, and switch statements; control flow and logical expressions.

Session 4 — Loops & Basic Math Functions

Implementing loops (for, while, do-while), using mathematical functions (sqrt, pow, abs), and loop control statements.

Week 3

Session 5 — Arrays, Strings & References

Working with 1D and 2D arrays, string manipulation, pointers, and references.

Session 6 — Functions

Defining and calling functions, parameters and return types, scope and lifetime of variables, function overloading, and inline functions.

Week 4

Session 7 — Classes & Objects

Object-oriented programming concepts, class and object syntax, access specifiers, constructors, destructors, and encapsulation.

Session 8 — Student Project Presentations & Course Review

Students present their completed mini-projects, demonstrate functionality, and explain their implementation.

The instructor provides feedback, evaluates project work, and conducts a brief course summary and discussion.

(No new teaching content; this session is dedicated to presentations and evaluation.)

Mini Project Examples

- Student Management System
- Simple Calculator
- Contact Book with File Storage
- Bank Account Simulation

Tools & Setup

- **Primary IDE:** Code::Blocks (includes compiler)
- **Alternative Option:** OnlineGDB (browser-based C++ environment)
- **System Requirement:** Laptop or PC with internet access

Official Certification

Upon successful completion of the course and submission of the final project, participants will be awarded an:

Official Certificate of Completion

Issued by: EdTech Syndicate — Lebanon

Certificate Title: *Introduction to C++ Programming*

Accreditation: Verified by EdTech Syndicate's certification system and recognized by educational partners.

Eligibility Requirements:

- Attendance in at least 6 of 8 sessions
- Completion of a minimum of 70% of assigned exercises
- Delivery and presentation of the final mini-project

This certificate recognizes proficiency in foundational C++ programming and the ability to apply core concepts in practice.