C++

Unit-wise syllabus and marks for the 2026-27 session.

UNITS	SESSION
6	2026-27

Exam pattern. Skills-based course with no fixed external board exam. Progress is assessed through coding assignments, hands-on lab exercises and a capstone project rather than a theory/practical marks split.

Practical. Hands-on, lab-driven learning: each unit includes coding exercises and debugging practice, building up to mini-projects (such as a class-based management program and an STL-based data-handling tool) and a final capstone project that applies OOP, STL and file handling.

#	UNIT AND TOPICS	MARKS
1	**Unit 1: C++ Foundations** Setting up a compiler and IDE; structure of a C++ program; Tokens, keywords, identifiers and comments; Variables, data types and the const qualifier; Input/output with cin and cout; namespaces; Operators: arithmetic, relational, logical, bitwise and assignment; Type conversion and type casting	–
2	**Unit 2: Control Flow and Functions** Conditional statements: if, if-else, nested if, switch; Loops: for, while, do-while; break and continue; Defining and calling functions; parameters and return values; Call by value vs call by reference; Function overloading and default arguments; Scope, storage classes and recursion	–
3	**Unit 3: Arrays, Strings and Pointers** One-dimensional and multi-dimensional arrays; C-style strings and the std::string class; Pointers and pointer arithmetic; references; Dynamic memory allocation with new and delete; Stack vs heap memory; Structures (struct) and enumerations	–
4	**Unit 4: Object-Oriented Programming** Classes and objects; data members and member functions; Access specifiers: public, private, protected; encapsulation; Constructors, destructors and the this pointer; Inheritance: single, multiple, multilevel and hierarchical; Polymorphism: function and operator overloading, virtual functions; Abstraction and abstract classes	–
5	**Unit 5: Templates, Exceptions and File Handling** Function templates and class templates (generics); Exception handling with try, catch and throw; File streams: ifstream, ofstream and fstream; Reading from and writing to text files; Lambda functions and an	–

#	UNIT AND TOPICS	MARKS
	introduction to modern C++ features	
6	**Unit 6: STL and Data Structure Fundamentals** STL overview: containers, iterators and algorithms; Sequence containers: vector, list, deque; Associative containers: set, map, pair; Container adapters: stack, queue, priority_queue; STL algorithms: sort, find, count, binary_search; DSA basics: linked lists, stacks, queues, searching and sorting; Big-O time complexity	–

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