

C++ Essentials 2

Scope and Sequence

Version 1.0

Developed in collaboration with
OpenEDG C++ Institute

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Target Audience

C++ Essentials 2 (CPPE2) is tailored for individuals who have completed the C++ Essentials 1 course or possess a foundational understanding of C++ programming and want to **take their C++ skills to the next level**. This course is designed to deepen the learner's knowledge and expertise, exploring advanced concepts and techniques essential for mastering the language.

It is well-suited for:

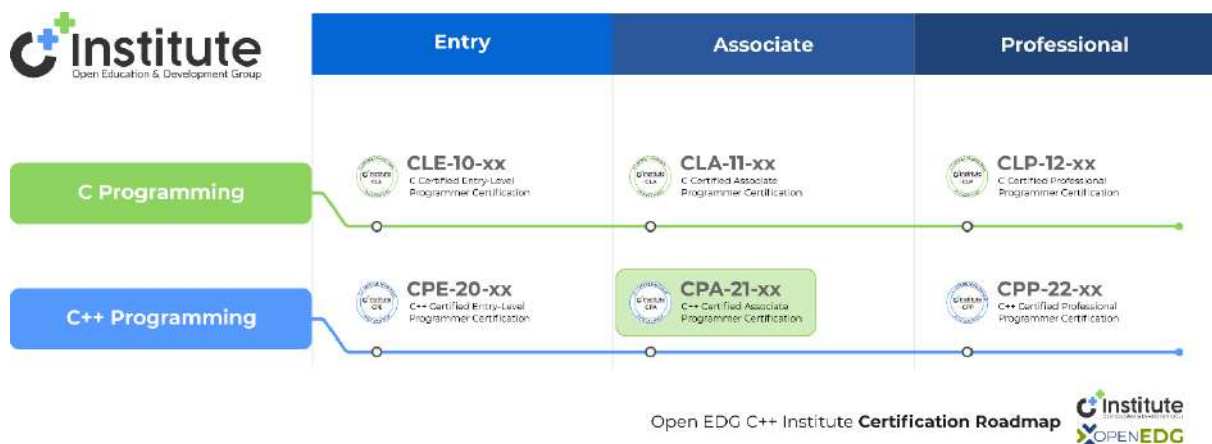
- Programmers with basic C++ knowledge aiming to deepen their understanding of advanced concepts.
- Individuals seeking to achieve the [CPA – C++ Certified Associate Programmer](#) certification.
- Professionals and students interested in software engineering, systems programming, or game development.
- Hobbyists or programmers looking to enhance their skills in object-oriented programming and other advanced C++ features.

Course Prerequisites

- Successful completion of C++ Essentials 1, CPE certification, or equivalent knowledge in C++ fundamentals.
- Understanding of basic programming concepts such as variables, control structures, data types, and functions.

Certification Alignment

C++ Essentials 2 is aligned with the [CPA – C++ Certified Associate Programmer](#) certification. By combining the foundational knowledge from C++ Essentials 1 with the advanced concepts covered in C++ Essentials 2, candidates receive thorough preparation for the CPA exam. This comprehensive approach ensures a deep understanding of all necessary C++ concepts, techniques, and practical applications, setting the stage for success and proficiency in C++ programming.



This certification assesses proficiency in advanced programming concepts, including **object-oriented programming (OOP)**, **inheritance**, **polymorphism**, and **exception handling** in C++. It establishes a comprehensive understanding of C++ programming skills required for various technical roles in the industry.

Candidates can take the CPA – C++ Certified Associate Programmer certification exam via the [TestNow™](#) – OpenEDG Testing Service Platform.

Course Description

Developed by the OpenEDG [C++ Institute](#) and delivered in partnership with the [Cisco Networking Academy](#), C++ Essentials 2 is **the sequel to C++ Essentials 1**, focusing on advanced C++ programming concepts.

The course covers **object-oriented programming**, **inheritance**, **polymorphism**, **exception handling**, **operator overloading**, and the use of **enumerated types**.

With a blend of theoretical learning (**study pages**) and practical application through **quiz tests** and **hands-on labs**, students are prepared for real-world programming challenges and the CPA certification.

- **Module 1:** Introduction to object-oriented programming, classes, objects, and static components.
- **Module 2:** Detailed exploration of inheritance, polymorphism, dynamic casting, and class relationships.
- **Module 3:** Comprehensive study of exception handling mechanisms in C++.
- **Module 4:** Operator overloading and the implementation and use of enumerated types.

Course Objectives

1. **Apply** the principles of object-oriented programming to design and implement efficient C++ programs (Module 1).
2. **Analyze** and utilize inheritance and polymorphism to create flexible and reusable code (Module 2).
3. **Evaluate** and implement exception handling mechanisms to develop robust C++ applications (Module 3).
4. **Create** programs that use operator overloading and enumerated types for enhanced functionality and readability (Module 4).

Equipment Requirements

- Access to a computer with an internet connection to participate in online course activities.
- A modern web browser installed on the computer.

- While the course can be accessed online, learners have the option to download and install an offline Integrated Development Environment (IDE). Recommendations for IDE selection and setup are provided early in the course.

Course Outline

MODULE NUMBER AND NAME	RESOURCES	OBJECTIVES COVERED
Welcome to C++ Essentials 2	Course Structure, Certification Opportunities, and Getting Started with C++ Essentials 2	Find out how to start and use this course to continue your learning journey, picking up where C++ Essentials 1 left off. Learn about the course layout, how to move through it, the certification it helps you prepare for, and which tools to utilize to maximize your learning experience.
Module 1: Object-Oriented Programming Essentials	Study Pages, Labs, and Module 1 Test	After completing Module 1, the learner will master the fundamentals of object-oriented programming in C++.
Module 2: Inheritance and Polymorphism	Study Pages, Labs, and Module 2 Test	After completing Module 2, the learner will apply advanced concepts such as inheritance and polymorphism to design versatile C++ applications.
Module 3: Exception Handling	Study Pages, Labs, and Module 3 Test	After completing Module 3, the learner will effectively manage exceptions to enhance application reliability and user experience.
Module 4: Operators and Enumerated Types	Study Pages, Labs, and Module 4 Test	After completing Module 4, the learner will implement operator overloading and use enumerated types for clearer and more maintainable code.
Course Completion	C++ Essentials 2 – Final Test (Score 70% or more to qualify for a 50% discount on the CPA)	Upon completing the C++ Essentials 2 Final Test, learners will have demonstrated a profound ability to engage with and apply complex programming concepts,

	<p>exam) + Become CPA certified (Paid Option)</p>	<p>showcasing their mastery in the realms of object-oriented programming, such as advanced class construction, inheritance strategies, and the implementation of polymorphism. They will have illustrated their skill in navigating exception handling and customizing program behavior through operator overloading. Furthermore, learners will have shown their proficiency in utilizing advanced C++ functionalities like enumerated types to create code that is not only effective but also streamlined and easier to maintain.</p> <p>This accomplishment underscores the learners' thorough comprehension and practical deployment of the course's advanced subject matter. It signifies their preparedness for the CPA certification, equipping them to solve complex problems and undertake ambitious projects in various tech domains, from software engineering and systems programming to game development.</p>
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Why Pursue Further C++ Mastery

Elevating your proficiency in C++ through the C++ Essentials 2 course places you at the cutting edge of a wide array of technological arenas.

The advanced skills and knowledge acquired extend well beyond the fundamentals, preparing you for sophisticated tasks in software engineering, systems design, game development, and more.

Achieving the CPA certification underscores your dedication to excelling in C++ programming, paving the way for professional growth and opening avenues to innovative technology ventures.