

NEW YORK CITY COLLEGE OF TECHNOLOGY/CUNY
Computer Systems Technology Department

COURSE: CST2403 – C++ Programming Part 1 (4 hours , 3 credits)

INSTRUCTOR: _____ **OFFICE:** _____

CLASS MEETING DATES: _____

E-MAIL: _____

OFFICE HOURS: _____

Course Description:

This course is an intensive introduction to computer programming using the C++ programming language. Initial topics include the implementation in the C++ language of data types, operations, expressions, decision statements, and loops. Other topics include user-defined functions, arrays, and pointers. Concepts of object-oriented-programming will be demonstrated through the introduction of class objects and constructors.

The course will teach the fundamental programming assignments aimed at reinforcing the material covered in class.

Course Objectives:

Upon completion of this course, student will be able to:

1. Develop basic programming skill in "C++"
2. Understand a C++ program development environment (Visual C++).
3. Use input/output statements and different data types in C++.
4. Understand arithmetic operators, logical operators and relational operators.
5. Use if, if/else and switch selection structure, while, do/while and for repetition structures to execute statements in a program repeatedly and break and continue program control statements.
6. Create new functions and understand how to write and use functions
7. Understand how to use array and pointers, and to understand close relationship among pointers, arrays and strings
8. Understand basic class definition

General Education Outcomes:

- **SKILLS/Inquiry/Analysis:** Students will employ scientific reasoning and logical thinking.
- **SKILLS/Communication:** Students will communicate in diverse settings , using written (both reading and writing), oral (both speaking and listening), and visual means
- **INTEGRATION/Integrate learning:** Students will resolve difficult issues creatively by employing multiple systems and tools.
- **VALUES, ETHICS, RELATIONSHIPS / Professional/Personal Development:** Students may work with teams, including those of diverse composition. Build consensus. Respect and use creativity.

Prerequisites:

CST1101 (Computer Programming and Problem Solving) or any programming languages.

Required Textbook:

H.M.Deitel and P.J.Deitel, *C++ How to Program*, 10th edition, Prentice Hall (Pearson), 2017.

Course Materials: All course materials (e.g., syllabus, lecture slides, assignment, exam/quiz review, ...) will be posted on Blackboard.

Academic Integrity Policy: Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of College policy on Academic Integrity may be found in catalog.

Grading Procedure:

Final Examination	35%
Midterm Examination	30%
Quizzes	15%
Assignments	15%
Class Participation	5%
Total	100%

Participation: Use the Discussion Board area of the Blackboard site at least once a week and respond to the discussion questions with specific, meaningful posts (not just “ok” or “I agree”). At the beginning of each week, I will post questions based on previous lecture. Also, use the Discussion Board to discuss any issues with your classmates (do not post code or solutions).

Suggestions: Students may study and discuss homework problems together. However, students are responsible for submitting their own original work. Students found cheating may be penalized. If you miss a class, you are responsible for the material. Have the phone numbers or emails of several other students to find out what material you missed

Course Schedule or Outline:

	Topics	Reading
Week 1,2	C++ Development Environment: Input/Output, Variables, Data Types, Arithmetic	Chapter 1.9 Chapter 2.1-2.7
Week 3	More Operators, Type Conversion, More Input/Output, Constant Variable	Chapter 4.12-4.13 Chapter 4.10.4, 4.10.5, 5.4 Chapter 7.4.3
Week 4	Relational Operator, Control Structures: if/else, switch Logical Operator	Chapter 2.7 Chapter 4.4-4.6, 5.9, 5.12 Chapter 5.11
Week 5	More structures: while, do/while and for loop Break and Continue statements	Chapter 4.8-4.11, 5.8, 5.2-5.5 Chapter 5.10
Week 6, Week 7	Functions	Chapter 6.1-6.7, 6.10-6.13, 6.15, 6.16
Week 8	Midterm Term: Review and Exam	
Week 9, Week 10	Arrays Built-in Arrays	Chapter 7.1-7.5, 7.7,7.8,7.10 8.5
Week 11, Week 12	Pointers	Chapter 8.1-8.12
Week 13, Week 14	Strings Introduction to classes	Chapter 10.2 Chapter 1.8, 3.1-3.7
Week 15	Review and Final Exam	

Assessment criteria

For the successful completion of this course a student should be able to:	Evaluation methods and criteria
1. Understand a C++ program development environment	1. Students will edit, compile, and execute a simple program.
2. Understand arithmetic operators, logical operators, and relation operators.	2. Students will write a program using the C++ arithmetic operators, input/output methods and appropriate manipulators for formatting.
3. Use if, if/else and switch selection structure.	3. Students will write a program using appropriate selection statements such as if –else and switch.
4. Use while, do/while and for repetition structures to execute statements in a program repeatedly.	4. Students will write a program using appropriate looping statements such as while, for and do/while.
5. Create new functions and understand how to write function.	5. Students will write a program using functions with parameters passed by value and by reference.
6. Understand how to use array and pointers.	6. Students will use both one dimensional and multi-dimensional arrays. Students will describe different sorting and searching algorithms. Students will write a program using functions with parameters passed by pointers.
7. Understand how to use strings.	7. Students will use character data and string processing.
8. Understand basic class definition	8. Students will use classes with data, member functions and constructors.

General Education Outcomes and Assessment:

Learning Outcomes	Assessment Method
SKILLS/Inquiry/Analysis Students will employ scientific reasoning and logical thinking.	Students will describe problem, identify inputs, processes and desired outcomes in programming assignments, class work and tests. Students will find algorithm to solve problems in programming assignments, class work and tests. Students will identify coding paradigms in Programming Assignments, Class work and tests
SKILLS/Communication Students will communicate in diverse settings and groups, using written (both reading and writing), oral (both speaking and listening), and visual means	Students may work on term paper in which they will describe programming project and how it was implemented with C++ programming Language. Oral presentations of the C++ project
INTEGRATION/Integrate learning: Students will resolve difficult issues creatively by employing multiple systems and tools.	Programming assignments where student will write codes to solve problems independently.
VALUES, ETHICS, RELATIONSHIPS / Professional/Personal Development Students may work with teams, including those of diverse composition. Build consensus. Respect and use creativity.	May work on C++ programming project in which students will work in groups, build consensus and respect and use creativity