Queens College, CUNY, Department of Computer Science
INTRODUCTION TO ALGORITHMIC PROBLEM SOLVING CSCI
111
Fall 2021
Instructor: Aryeh Greenberg

Fall Office Hours: Immediately after Lecture/Lab (Email to arrange other times)
Course Description Programming algorithms in the **C++** language using basic data types and arrays.
It is highly recommended that you bring your own laptop to the lecture with Microsoft Visual Studio 2019 or greater Installed on it as this is the environment that the lecture will be presented with.
Credits: 2 lec., 2 lab. hr.; 3 cr.
Optional text Brian Overland, *C++ without fear*
Topics to be covered
- data types
- control structures
- procedures and functions
- parameter passing
- scope and lifetime of variables
- 1D, 2D, and 3D arrays
- Common Algorithms

Not covered
- Pointers (except as needed to pass arrays to functions) • concepts of object, class, and method (except Cout class)
- Recursion.

Topics in Detail
PART I

Introduction
- main – where it all begins.
- Creating your first "Hello World" program
- Explanation of C++ program layout; header files, include directives, program return values
- Compiled vs. Interpreted. Managed versus Un-Managed.
- Pre-compiler, compiler, linker
- High vs Low Level Languages
- cout an example of an object
- Difference between C and C++ (we will using some C++ features but not too many)
- Using cout and cin

Variables
- Everything is a number.
- Whole numbers
- Decimals
- Characters
- Boolean
- Data type promotion and conversion.
- String char's in an array.
- Static Variable
- Variable scope

Code
- Commenting Code
- C Statement
- Code blocks
- True and False in C
- Expressions
- Conditional Expression
- Loops & Conditional Loops
- Random
- Case statement

PART II

Arrays
- String array - (array of char)
- General arrays
- 1D, 2D, and 3D Arrays

Functions
- Return Values
- Parameters
- Default Parameters
- Function Overloading

Algorithms
- Bubble Sort
- Selection Sort
- Insertion Sort
- Binary Search

Learning Goals. A solid understanding of the fundamental concepts of programming in C++. Successful students will be able to write correct and complete C++ implementations of projects assigned in lab sessions.

Successful students will also complete exam questions that require the writing, reading and analysis of C++ programs and portions of C++ programs.

Instructor: Aryeh Greenberg
aryeh.greenberg@qc.cuny.edu office hours: after class
or remotely using screen sharing software.

Course Website:
http://introtocplusplus.com/

Fall Session 2020 - Aug 26, 2020- Dec 20, 2020
Lecture/Lab: Mo We 7:30PM – 9:20 PM

Grading:
Two midterm exams and final exam + Lab homework. All exams require manual coding.
Final Grade =
60% = Highest 2 grades of: Midterm 1, Midterm 2 & Lab
40% = Final

Lab grade - 50% of consists of assigned homework. Homework must be submitted online though a link on the introtocplusplus web site one hour before the next lecture. Homework will be randomly graded, that is, it is not possible to grade every homework daily, but a certain percentage will be graded.
50% will be through 2 – 3 lab quizzes.

Student ID:
Every student will receive a unique Class ID so they can see their grades. Each student will be emailed their Id at the email address identified by them in CunyFirst.

Note:
Midterm 1 is usually easier than Midterm 2.

Policy: Academic dishonesty such as plagiarism or cheating will be dealt with seriously in accord with the University's policy on academic integrity.