LAGUARDIA COMMUNITY COLLEGE
CITY UNIVERSITY OF NEW YORK
DEPARTMENT OF MATHEMATICS, ENGINEERING, and COMPUTER SCIENCE

MAC101 Introduction to Computer Science
(Modified 6/20/2016 by Andi Toce)

4 hours (3 lecture, 1 lab), 3 credits
Prerequisites: CSE099 and MAT200
Pre/Corequisites: ENG/ESA099/ENC101, ENA099

CATALOG DESCRIPTION:
In this first course in the computer science program, emphasis will be placed on algorithmic design. Basic concepts such as selection statements, loops, character strings, arrays, pointers and file processing will be taught. Students will be required to write several programs in an appropriate language.

Instructional Objectives:

1. Introduce students to the technical vocabulary of computer science.
2. Enable students to design programs to solve computer science problems.
3. Familiarize students with number systems and the representation of data in computer memory.
4. Familiarize students with basic control structures such as iteration, sequence and selection.
5. Introduce the concept of recursion.
6. Familiarize students with basic sorting algorithms.
7. Introduce students to arrays and strings.

Performance Objectives:

1. Use appropriate technical vocabulary in writing assignments and projects.
2. Design programs (algorithms) to solve problems.
3. Convert numbers from one base to another and describe computer memory structures.
4. Write programs using the basic control structures of iteration, sequence and selection.
5. Utilize recursive methods in solving problems.
6. Code basic sorting algorithms in an appropriate higher-level language.
7. Use data structures such as arrays and strings.

TEXTBOOK: Brian Overland, **C++ without fear: A Beginner's Guide that Makes You Feel Smart, 3rd edition,** Prentice Hall, 2016, ISBN: 978-0-13-431430-3
Note: Other book and online resources can also be used in this class.

GRADING STANDARDS:

Quizzes and Lab Work	10%
HW	10%
Midterm Exams (2@20%)	40%
Final Exam	40%
Total	100%

Note: Your labs will be graded following the following rubric:

1	2	3	4	5
The student has entered a code that does not solve the problem and may or may not run. The code has no relation at all to the solution of the problem.	The program has a sense of the solution but is lacking some key logic.	The structure of the program is good but there is one small logic or syntax error.	The program solves the problem but it is not documented and written concisely and lacks good programming style.	The program solves the problem correctly, is documented, and tested for all cases. Experiments

ACADEMIC INTEGRITY: This class will be conducted in compliance with LaGuardia Community College's academic integrity policy.

Sanctions for Academic Integrity Violations: Sanctions or penalties for violations of academic integrity are imposed by the faculty member teaching the course upon discovery of a violation. All cases of academic dishonesty are filed with the College Adjudicator, who maintains a record of academic integrity violations.

The occurrence of a second or third offense of academic dishonesty may involve the imposition of a disciplinary sanction in addition to the academic sanction imposed by the instructor. Sanctions for violations of academic integrity include, but are not limited to, the following:

– failure of an exam
– a grade of F on an essay or research paper
– failure of a course project
– failure of the course
– suspension from the College
– dismissal from the College

ATTENDANCE: The maximum number of unexcused absences allowed is 15% of the total class meetings (about 7 hours). Unexcused absences beyond this maximum will result in a grade of WU or F.

COURSE OUTLINE

Weeks	Topic
Week 1	Computer use. Introduction to C++ and visual C++. Inputs and Outputs
Week 2	Numbers at Different Bases
Week 3	Data types, Variables, and Assignments
Week 4	Selection Statements *if-else*
Week 5	Repetition, *while* and *for* loops **Midterm 1**
Week 6	Functions and parameters
Week 7	Scope of a variable, Passing parameters by value *vs.* by reference
Week 8	Arrays
Week 9	Introduction to pointers, Pointers *vs.* references **Midterm 2**
Week 10	Strings and other data structures
Week 11	File processing Elementary sorting algorithms
Week 12	Sorting algorithms Final Exam Review
Week 13	**Final Exam**