

1. Course number and name:

CMP 120- Programming I

2. Credits Hours

2-3-3

3. Prerequisite and/or Co-Requisite:

Prerequisite: NGN 110 (Introduction to Engineering and Computing)

4. Name and Contact of Instructor:

Dr. Raafat Aburukba
Computer Science & Engineering
Office: EB1 – 202
Email: raburukba@aus.edu
Phone: 06 515-2956
Office Hours: Posted on office door and on iLearn

5. Course Description (Catalog Description):

Provides an overview of computer architecture and programming. Examines elements of a C++ program, statements and expressions, data types, relational and logical operators, conditional and iterative control structures. Examines file I/O, declaration and initialization of arrays and strings, pointers and function arguments. Covers program design and testing, and modular programming. Includes laboratory and programming assignments.

6. Textbook and other Supplemental Material:

Textbook:

- W. Savitch, *Problem Solving with C++*, 9th edition (Global Edition). Pearson, 2014.

Other supplemental materials

- J. Brookshear, *Computer Science: An Overview*, 10th edition. Addison-Wesley, 2008.

7. Learning outcomes:

Upon completion of the course, students will be able to:

1. Describe the parts of computer architecture and the phases of developing a computer program.
2. Use an integrated development environment (IDE) to develop and debug software in C++
3. Draw a flowchart/activity diagram and map it to a computer program.
4. Develop C++ programs that require the use of console and file I/O statements
5. Implement simple algorithms in C++ using decision making and iterations.
6. Develop structured C++ programs using built-in and user defined functions.
7. Utilize primitive data types, arrays, pointers and C-strings to develop C++ programs.

8. Teaching and Learning Methodologies:

Methods include two one-hour lectures per week and one three hours lab. The course includes HW and makes use of presentations, code development in class and class interactions.

9. Course Topics and Schedule:

Introduction to Computers and C++ Programming	2
Control Structures	3
Functions	2
Arrays	3
Pointers and strings	3
File I/O	1
Review	2
Total	16

10. Schedule of Laboratory and other Non-Lecture Sessions:

One three-hour lab per week

11. Out-of-Class Assignments with Due Dates:

- HW1: Variables, Arithmetic and basic decision making
- HW2: Loops
- HW3: Functions
- HW4: Arrays
- HW5: Pointers and dynamic arrays
- HW6: File I/O

The course also includes weekly lab sessions and lab exercises.

12. Student Evaluation:

HW and attendance	9 %
Labs	11 %
Quizzes	7 %
Midterm I	20 %
Midterm II	23 %
Final Exam	30 %

13. Contribution of Course to Program Outcome:

This course contributes to the accomplishment of the following program outcomes:

CMP Program outcome	Emphasis in this course
a) an ability to apply knowledge of computing and mathematics	
b) an ability to analyze a problem, identify and define the computing requirements	●
c) an ability to design, implement and evaluate a computer-based system, process, component, or program	●
d) an ability to function effectively on teams to accomplish a common goal	
e) an understanding of professional, ethical, legal, security and social issues and responsibilities	
f) an ability to communicate effectively with a range of audiences	
g) an ability to analyze the local and global impact of computing on individuals, organizations, and society	
h) recognition of the need for and an ability to engage in continuing professional development	
i) an ability to use current techniques, skills, and tools necessary for computing practice	●
(J) An ability to apply mathematical foundations, algorithmic principles, and computer science	
(k) An ability to apply design and development principles in the construction of software	●

Emphasis: ● High; ◐ Medium; ○ Low; Blank – Nothing Specific Expected

COE Program outcome	Emphasis in this course
(a) an ability to apply knowledge of mathematics, science, and engineering	
(b) an ability to design and conduct experiments, as well as to analyze and interpret data	
(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability	●
(d) an ability to function on multidisciplinary teams	
(e) an ability to identify, formulate, and solve engineering problems	●
(f) an understanding of professional and ethical responsibility	
(g) an ability to communicate effectively	
(h) the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context	
(i) a recognition of the need for, and an ability to engage in life-long learning	
(j) a knowledge of contemporary issues	

(k) an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.	○
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Emphasis: ● High; ◐ Medium; ○ Low; Blank – Nothing Specific Expected