American University of Sharjah | College of Engineering

1. Course Number and Course Title: CMP 120 – Programming I

2. Credit and Contact Hours: 3-2-3

3. Prerequisites and/or Co-Requisites: Prerequisite: NGN 110 (Introduction to Engineering and Computing) or sophomore standing.

4. Name and Contact Information of Instructor: Dr. Tamer Shanableh

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++*, 10th ed., Pearson, 2018

- Other supplemental materials:
 - None.

7. Course 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 including flowcharts.

2. Use an integrated development environment (IDE) to develop and debug software in C^{++}

- 3. Develop C++ programs that require the use of console and file I/O statements
- 4. Implement simple algorithms in C++ using decision making and iterations.
- 5. Develop structured C++ programs using built-in and user defined functions.
- 6. Develop C++ programs using c-strings, 1D and 2D arrays
- 7. Develop C++ programs using pointers and dynamic memory allocation.

8. Teaching and Learning Methodologies:

Methods include three one-hour lectures per week and one two hours lab, quizzes, exams and class exercises.

9. Course Topics and Schedule:

Topic/Activity	Weeks
Introduction to Computers and phases of developing a program	Week 1
Variables and expressions	Week 2

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Conditional statements	Week 3
Loops	Week 4
Nested loops	Week 5
Introduction to functions	Week 6
Function overloading, default arguments and passing by reference	Week 7
Programming with 1-D arrays	Week 8
Programming with 2-D arrays	Week 9
Arrays and functions	Week 10
C-strings	Week 11
File IO	Week 12
Programming with pointers	Week 13
Dynamic memory allocation and using functions with points	Week 14
Revision	Week 15
Final Exam	Week 16