Course information:

Course code & number: CSC 112	**Course title: Programming I**
Pre-requisite: CSC 101 Introduction to Computers	**Co-requisite: None**

Instructor information:

Name: Awad Khalil   Email: softeng8@gmail.com

Office hours: 1:00 – 3:00 Monday & 1:00 – 3:00 pm Tuesday

Course description as it appears in the catalog:

Overview of basic programming constructs. Functions, parameter passing and files. Data modeling with arrays, structures and classes. Pointers and linked lists. Recursion. Basic program design and analysis, testing and debugging techniques. Programming in C++. Program development using modern APIs.

Course outcomes:

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

- Know how to create non trivial computer programs using the C++ programming language
- Understand the use of functions and parameter passing
- Understand the use of arrays and structs
- Be able to open, read, and write to text and binary files
- Create user defined data types using classes
- Use and manipulate pointers
- Process dynamic data structures such as lists and binary trees
- Understand abstract data types
- Understand recursive programming

Course topics and contents:

Week	Topic
1 & 2	Revision - Basic data types and control structures
3	Top-Down Design
4	Modular Programming using Functions
5	Strings
6	Binary and text files
7	One dimensional arrays
8	**Midterm Exam I**
9	Two dimensional arrays
10	Sorting and Search Algorithms
11	Modular Programming
12	User defined structures
13	**Midterm exam II**
14 & 15	Research work presentations
16	**Final Exam**

Lab Sessions Schedule:

Week	Topic
1	Revision On C++ structure, Arithmetic Operations and control statements
2	Developing programs using C++ Function
3	Developing Modular programs using C++ Functions
4	Developing programs using basic operations on string
5	Developing programs using operations on files
6	Developing programs using C++ One dimensional arrays
7	**Practical Exam I**
8	Developing programs using C++ Two dimensional arrays
9	Developing programs using Sorting and Search Algorithms
10	Project development
11	Project development
12	**Practical Exam 2**
13	Project development
14	Project submission & presentation

Lab Project:

Graphics and Animations are very interesting features of Computer Applications. In this project, each student is asked to develop the following Computer Applications:

1. Draw a series of circles along one diagonal of a window. The circles should be different colors and each circle should touch the one above and below it.
2. Draw a series of circles along one diagonal of a window. The circles should be different colors and each circle should touch the one above and below it. Draw a series of squares along the other diagonal as well.
3. Draw a simple stick figure and move it across the screen.
4. Draw a single circle that moves down a diagonal of a window. (**5% Bonus**)
5. Draw a single circle and square moving along each diagonal of a window. (**10% Bonus**)

Course assessment details:

Lab Course Work & Project	20%
Quizzes and Midterm Exams	40%
Final Exam	40%
Total	**100%**

Course texts, instructional material and learning resources:

Author	Title	ISBN -13	Year/ Editio	Publisher
Friedman and Koffm	Problem Solving, Abstr and Design using C++,	978-013607947	2011, 6th	Addison-Wesley
Paul Deitel	C++ how to program	978-013266236	2011, 8th	Prentice Hall