University of Jordan
King Abdullah II School for Information Technology (KASIT)
Department of Computer Science

Course: Computer Skills 2- (1931102) (Scientific)
Semester: First 2015/2016
Prerequisite: Computer Skills 1 - (1900100)
Instructor: Dr. Jamal Alsakran
Office hours: 12 – 1 Su, Tu, and Th

Course Description:

This course presents the fundamental concepts of programming using C++. It covers the basic structures of the programming tools such as variable names; data types; control structures; arrays; functions; and an introduction to file processing.

Objectives

Enable students to:

1. Understand the basic concepts of the C++ programming language.
2. Understand memory location concepts, operators, and data types.
3. Understand the I/O predefined functions.
4. Understand and compare between control structures (Selection and Repetition).
5. Understand how to implement user defined functions.
6. Understand the concept of arrays and strings.
7. Analyze a problem and design an algorithm to solve it.

Intended Learning Outcomes:

Successful completion of this course should lead to the following learning outcomes:

A. Knowledge and Understanding: students should
   A1. Understand the basic concepts of the C++ programming language.
   A2. Understand memory location concepts, operators, and data types.
   A3. Understand the basic problem solving techniques using control structures; functions; and arrays.
B. Intellectual Skills: students should be able to:
   B1. Compare between the different control structures
   B2. Compare and contrast the basic methods of parameter passing in C++: namely passing parameters by value vs. passing parameters by reference.
   B3. Compare between void functions and value-returning functions
   B4. Compare between one and two-dimensional arrays
C. Subject Specific Skills: students should be able to:
   C1. Analyze a problem and design an algorithm to solve it.

C2. Develop algorithms using selection statements; repetition statements; functions; and Strings.

D. Transferable Skills: students should be able to:
   D1. Work in groups to help understand and analyze a given problem.
   D2. Work in a group to implement an algorithm using C++
   D3. Demonstrate the developed C++ program

Teaching/Learning Methods:

Lecturing and Discussions:	A1-A3 and B1-B5
Assignments	B1-B5 and C1-C2
Quizzes	D1-D3
Exams	A1-A3 , B1-B5, and C1-C2

Course Contents:

Chapter	**Topic Details**	**Teaching/Learning and Assessment Methods**	**ILOs**	**Period**
Chapter 2: Basic Elements of C++	1. Basics of a C++ program 2. Data types and Variables 3. Arithmetic operators, operator precedence, Expressions 4. Type Conversion (Casting) 5. string Type 6. Variables and Assignment statements 7. Increment and decrement operators 8. Basic input and output 9. Preprocessor directives	**T**: Lecture and examples **L**: Reading lecture notes **A**: in Class questions, writing programs that perform simple operations.	A1,A2,C1	5 hours
	Practical session			1 hour
Chapter 3: Input/Output	1. I/O streams and standard I/O devices 2. Predefined functions (get function only) 3. Input Failure	**T**: Lecture and examples **L**: Reading lecture notes **A**: in Class questions.	A1	2 hours
	Practical session			1 hour
Chapters 4: Control Structure (selection)	1. Relational operators 2. Logical operators and logical expressions 3. Selection (if and if … else) 4. The conditional operator (? :) 5. The switch statement	**T**: Lecture and examples **L**: Reading lecture notes **A**: in Class questions, writing programs that solve problems that need	A3,B1,C1, C2,D1,D2	5 hours

		control structures.		
	Practical session			1 hour
First Exam (7th week): 10/11/2015				
Chapters 5: Control Structure (repetition)	1. The while loop 2. The for loop 3. The do…while loop 4. Nested control structures 5. break and continue statements	**T**: Lecture and examples **L**: Reading lecture notes **A**: in Class questions, writing programs that solve problems that need control structures.	A3,B1,C1,C2,D1,D2	4 hours
	Practical session			1 hour
Chapters 6+7: User-defined functions	1. predefined functions 2. user-defined functions 3. value-returning and void functions 4. value and reference parameters, memory allocation 5. function overloading 6. default arguments 7. Scope of an identifier 8. Global variables, and side effects	**T**: Lecture and examples **L**: Reading lecture notes **A**: in Class questions, writing programs that solve problems that use group of functions.	A3,B2,B3,C1,C2,D1,D2,D3	6 hours
	Practical session			1 hour
Second Exam (13th week): 20/12/2015				
Chapter 9: Arrays	1. Accessing arrays components 2. processing one-dimensional arrays 3. Array index and bounds 4. Array initialization during declaration 5. Restrictions on arrays processing 6. Arrays as function parameters 7. 2D arrays processing	**T**: Lecture and examples **L**: Reading lecture notes **A**: in Class questions, writing complex programs.	A3,B4,C1,C2,D1,D2,D3	6 hours
	Practical session			1 hour
Chapter 8: Strings	1. string Type 2. String operations: length; size; operator (+); find; substr; swap; and concatenation	**T**: Lecture and examples **L**: Reading lecture notes **A**: in Class questions.	A3,C2,D1,D2,D3	2 hours
	Practical session			1 hour
Final Exam: 9/1/2016				

Teaching (T) Strategies: Class Contact is 3 Hours per week. The Course will be delivered using different means like lecture, presentations, seminars, discussion and case studies.

Learning (L) Methods: Students attend classes, ask questions and participate in discussions, do the home works, present the assignments and demo their works. A student will use the lab and implement the assignments using C++ programming language. Students will access the e-learning platform for more instruction and supported learning materials.

Assessment (A) Methods: There will be several assessment methods of evaluation the performance of the students such as attending and class participation, grading the homework, quizzes and assignments; conducting the Midterm and the Final Exams. Every student is expected to completely adhere to the assignments and project strict deadlines, absolutely no exceptions will be given.

Evaluation:

- Automated First Exam 20%
- Write-code Second Exam 20%
- Homework and/or Quizzes 10%
- Final Exam 50%

Tentative Grading Scale:

0 - 40	**F**
41-49	**D-**
50-53	**D**
54-57	**D+**
58-61	**C-**
62-66	**C**
67-70	**C+**
71-75	**B-**
76-79	**B**
80-84	**B+**
85-89	**A-**
90-100	**A**

Textbook:

- C++ Programming: From problem analysis to program design, **5th edition**, D.S. Malik, Thomson Learning, 2011.

References:

- C++ How to Program, 7th edition, P. Deitel and H. Deitel, Prentice Hall, 2009.
- Problem Solving with C++: the Object of Programming, W. Savitch, Addison Wesley, 2003.

- Programming in C++: Lessons and Applications, Timothy B. D'Orazio, 1st edition, McGrawHill, 2004.

Notes:

- Deliberate abstention from attending 1901102 classes and any other similar acts will lead to student deprivation from the course according to the UJ regulations.
- If you miss the midterm, then a makeup exam will not be provided unless you submit a valid absence excuse, within three days from the midterm, to your lecturer. This excuse must be signed and stamped from the UJ hospital in order to be valid. If your lecturer accepts the excuse then you will be able to take the midterm makeup. You need to follow up the departmental announcements regarding the makeup date and time. Please note that the lecturer may either accept or reject your excuse based on UJ regulations.