جامعة الإسـراء

ISRA UNIVERSITY

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Programming Fundamentals

Course Number 06051211

Ref: Deans Council (05) Decision No. (06) Date: 18/10/2021.
Ref: Quality Assurance Council Session (03) Decision No. (03) Date:05/10/2021.

General Course Information:

Course title	**Programming Fundamentals**
Course number	**06051211**
Credit hours	**3 hrs.**
Education type	**Hybrid (2 Synchronous, 1 Asynchronous)**
Prerequisites/corequisites	**Programming Methodology (06051110)**
Academic Program	**Computer Science**
Program code	**605**
Faculty	**Faculty of Information Technology**
Department	**Department of Computer Science**
Level of course	**1 st year**
Academic year /semester	**2021/2022, Second Semester**
Awarded qualification	**Bachelor (Bsc)**
Other department(s) involved in teaching the course	**None**
Language of instruction	**English**
Date of production/revision	**19/2/2022**

Course Coordinator:

Coordinator's name	**Dr. Osama Qtaish**
Office No	**4128**
Office Phone extension number	**962 6 4711710 ext. 2463**
Office Hours	**[10-11] Sun, [11-12:30] Mon, [12-1] Tues, [11-12:30] Wed, [12- 1] Thurs**
Email	**Osama.qtaish@iu.edu.jo**

Other Instructors:

Instructor name	
Office No	
Office Phone extension number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	Fundamental concepts of programming using C++ or Java: classes and objects, modeling object (attributes and behaviors), algorithms, problem solving flowcharts, pseudo codes. Basic blocks of programming such as variable names, data types, control structures, functions, arrays.
Arabic	يت أساسيات البرمجة بلغة سي أو جافا، رسومات سير العمليات، الخوارزميات، مكونات البرمجة الأساسية، أنواع البيانات، عمليات الإدخال والإخراج، هياكل التحكم، الجمل الشرطية، الاقتران، المصفوفات، المؤشرات.

Textbook: *Author(s), Title, Publisher, Edition, Year, Book website.*

C# Programming: From Problem Analysis to Program Design, Barbara, Doyle, Cengage Learning, 4th Edition

References: *Author(s), Title, Publisher, Edition, Year, Book website.*

Required book (s), assigned reading and audio-visuals: **1.** Paul Deitel, Harvey Deitel, C# How to Program, Pearson; latest edition, 2019. **2.** Dimitrov, D. et.al, Fundamentals of Computer Programming with C# , Svetlin Nakov & Co., 2013

Course Educational Objectives (CEOs):

1.	Provide students with basic concepts of computer programming environment and tools, and solving problems using algorithms and flowcharts.
2.	Illustrate the concepts of data, variables, and constants.
3.	Explain the use of I/O, arithmetic operators, and control structures.
4.	Explain the concepts of arrays, and dynamic memory allocation, and functions.
5.	Solve problems by writing programs and gain practical experience to become a programmer.

Intended Learning Outcomes (ILO's):

1.		Subject Intended learning outcomes (ILOs) describe what students are expected to know and be able to do at the end of the course. These outcomes are related to the knowledge, skill and competence that students acquire:	Relationship to CEOs	Contribution to PLOs	Bloom Taxonomy Levels*	Descriptors**
2.	A	**Knowledge and Understanding:**				
3.	A1	Exploring the fundamental knowledge of programming environments and solving problems and writing code using input/output methods, and arithmetic operators, and operator precedence	1,2,3	a,b	1,4	K
4.	B	**Intellectual skills:**				
5.	B1	Solving problems and writing code using selection statements such as if, if-else and switch, and looping statements such as while, for and do-while	3,5	a,b	1,3,4	S,C
6.	C	**Subject specific skills:**				
7.	C1	Solving problems and writing code using functions with parameters passed by value and by reference.	3,5	b	1,3,4	S,C
8.	D	**Transferable skills:**				
9.	D1	Using both one dimensional and multi-dimensional arrays. In addition to string manipulation and dynamic memory allocation	4,5	a,b	1,3,4	S,C

*Bloom Taxonomy Levels

Level #	1	2	3	4	5	6
Level Name	Knowledge	Comprehension	Application	Analysis	Evaluation	Synthesis

** Descriptor (National Qualification Framework Descriptors): K : Knowledge, S: Skill, C: Competency.

Program Learning Outcome (PLOs):

Program Learning Outcomes describe what students are expected to know and be able to do by the time of graduation. These relate to the knowledge, skills, and behaviours that students acquire as they progress through the program. A graduate of the (Computer Science) program will demonstrate:		Descriptors**		
		K	S	C
a.	Analyse a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.	√		
b.	Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.		√	
c.	Communicate effectively in a variety of professional contexts.			√
d.	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.			√
e.	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.			√
f.	Apply computer science theory and software development fundamentals to produce computing-based solutions. [CS]		√	

** Descriptors according to the national qualifications framework (K: knowledge, S: skill, C: Competency)

Weekly Schedule *(please choose the type of teaching)*

☐ **Face to Face**

■ **Hybrid** (*2 Lectures* *Face – To - Face* **+1 Lecture** *Asynchronous*)

☐ **Hybrid** (*1 Lectures* *Face – To - Face* **+1 Lecture** *Asynchronous*)

☐ **Online** (*2 Lectures* *Synchronous* **+1 lecture Asynchronous*)

Week	First Hour (Synchronous)	Second Hour (Synchronous)	Third Hour (Asynchronous)	Ach. ILOs	Ach. PLOs	DS**
1	Course Plan, Regulations, Course Webpage.	**Introduction Basic concepts:** Computer Organization programming languages,	**Course Videos** *(1 point each)* **Discussion Forum 1 (2 points)**	A1	a,b	K
2	**Introduction Basic concepts:** Programming environment Program solving and flowcharts	**Flowchart:** Simple flowcharts, conditional, flowchart, Simple iteration flowchart, and multiple iteration flowchart Data	**Course Videos** *(1 point each)* **Practice 2 (5 points)** (IDE) **Discussion Forum 2 (2 points)** (Programming languages)	A1	a,b	K
3	**Basic Elements of C#:** Program structure, I /O, Types, Constants, variables, Expressions:	**Basic Elements of C#:** Arithmetic, Assignment statement, block of statements	**Course Videos** *(1 point each)* **Practice 3 (5 points)** (Data Types) **Discussion Forum 3 (2 points)** (Assignments statements)	A1	a,b	K
4	**Control Structures I** (Selection) Selection (simple)	**Control Structures I** Logical operators, if statement, nested if	**Course Videos** *(1 point each)* **Practice 4 (5 points)** (If statement)	B1	a,b	S,C
5	**Control Structures I** While, nested while	**Control Structures II (Repetition)** do-while, for statement	**Course Videos** *(1 point each)* **Practice 5 (5 points)** (While statements) **Quiz #1 (5 points)**	B1	a,b	S,C
6	**Control Structures II** Switch statement	**Control Structures III** Nested Loops Selection (alternated, and multiple(switch)),break, continue	**Course Videos** *(1 point each)* **Practice 6 (5 points)** (Nested Loop) **Discussion Forum 4 (2 points)** (Switch statement)	B1	a,b	S,C
7	**Control Structures III** Nested Loops Selection (alternated, and multiple(switch)),break, continue	**Control Structures III** Nested Loops Selection (alternated, and multiple(switch)),break, continue	**Course Videos** *(1 point each)* **Practice 7 (5 points)** (break, continue)	B1	a,b	S,C
8	**Functions** Standard library functions (abs, floor, ceil, pow, sqrt), Scope rules,	**User Defined functions** Parameters definition and passing (function depth look)	**Course Videos** *(1 point each)*	C1	b	S,C
9	**User Defined functions** Parameters definition and passing (function depth look)	**User Defined functions** Parameters definition and passing (function depth look)	**Practice 8 (5 points)** (User defined function) **Quiz #2 (5 points)**	C1	b	S,C
10	**User Defined functions** Parameters definition and passing (function depth look)	**User Defined functions** Parameters definition and passing (function depth look)	**Course Videos** *(1 point each)*	C1	b	S,C
11	**Arrays:** One dimensional array (declare an array, read	**Arrays:** One dimensional array	**Course Videos** *(1 point each)* **Discussion Forum 6 (2 points)** (One dimensional array)	D1	a,b	S,C

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	array, print array, minimum, maximum)	(declare an array, read array, print array, minimum, maximum)				
12	**Arrays:** One dimensional array (declare an array, read array, print array)	**Arrays:** One dimensional array (declare an array, read array, print array)	**Quiz #3 (5 points)**	D1	a,b	S,C
13	**Arrays:** Two-dimensional array (declare an array, read array, print array, minimum, maximum) Arrays and functions: Passing the whole array .	**Arrays:** Two-dimensional array (declare an array, read array, print array, minimum, maximum) Arrays and functions: Passing the whole array	**Course Videos (1 point each) Discussion Forum 7 (2 points)** (Two-dimensional array)	D1	a,b	S,C
14	Methods	Methods	**Discussion Forum 8 (2 points)** (Methods)	D1	a,b	S,C
15	Wrap up and Q/A Session	Review for Final Exam		-	-	-

** **DS (Descriptors) - K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:
- **Interactive videos**
- **Practice Labs**
- **Discussion Forums**
- **Quizzes**
- **Other Interactive online activities**
- **Reports**

Course Policies:

A- Attendance policies:

   The maximum allowed absences is 15% of the lectures.

B- Absences from exams and handing in assignments on time:

   Midterm exam can be retaken based on approval of excuse by the instructor's discretion.

   Not handing assignment on time will incur penalties.

C- Academic Health and safety procedures

D- Honesty policy regarding cheating, plagiarism, and misbehaviour:

   Cheating, plagiarism, misbehaviour will result in zero grade and further disciplinary actions may be taken.

E- Grading policy:

- All homework is to be posted online through the e-learning system.
- Exams will be marked within 72 hours and the marked exam papers will be handed to the students.
- Online Activities (Course Videos, Practice labs, Discussion Forums, Quizzes) **30%**
- Midterm **20%**
- Final Exam **50%**

F- Available university services that support achievement in the course: **E-Learning Platform, Labs, Library.**

Required equipment:

- **PC / Laptop with webcam and mic**
- **Internet Connection**
- **Access to the IU E-Learning Platform at: https://elearn.iu.edu.jo/**
- **E-learning plan**
- Satisfaction questionnaires for online and face-to-face learning
- Software for e-learning
- Visual studio
- Training

Assessment Tools implemented in the course:

- Final Exam
- Midterm Exam
- Quizzes
- Homework
- Practice Labs
- Discussion Forums
- Periodic reports for learning assessment
- Improvement plans for online or face-to-face teaching
- Others:…….

Responsible Persons and their Signatures:

Course Coordinator	Dr. Osama Qtaish	Completed Date	2022/2/19
		Signature	

Received by (Department Head)		Received Date	/ /
		Signature	