جامعة الإسراء
ISRA UNIVERSITY

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Programming Methodology

Course Number:

06051110

General Course Information:

Course title	**Programming Methodology**
Course number	**06051110**
Credit hours	**3 Hours**
Education type	**Hybrid (2 hours Face-to-Face, 1 hour Asynchronous)**
Prerequisites/corequisites	**1100051 Pre. Computer Skills**
Academic Program	**Computer Science**
Program code	**600 / 605**
Faculty	**Isra University**
Department	**Faculty of Information Technology**
Level of course	**Computer Science**
Academic year /semester	**1**
Awarded qualification	**2021/2022 Second Semester**
Other department(s) involved in teaching the course	**(All departments of Faculty of IT)**
Language of instruction	**English**
Date of production/revision	**March. 2022**

Course Coordinator:

Coordinator's name	**Dr Venus W. Samawi**
Office No	**4113**
Office Phone extension number	
Office Hours	**10-11 Sun., 2:00-4:00 Mon., 12:30-2:00 Wed., 10-11 Tues.**
Email	**Venus. samawi@iu.edu.jo**

Other Instructors:

Instructor name	**Dr Mahmoud Baklizi**
Office No	
Office Phone extension number	
Office Hours	**10-11 Sun., 9:30-11 Mon., 12:30-2:00 Wed., 1-2 Tues.**
Email	**mbaklizi@iu.edu.jo**

Course Description *(English/Arabic)*:

English	Problem-solving concepts: constants and variables, data types, problem-solving steps, expressions, problem-solving tools, algorithms, flowcharts, pseudo-code, programming logic structures (sequential, decision, and loops), Arrays.
Arabic	مفاهيم حل المشكلات: الثوابت والمتغيرات، أنواع البيانات، خطوات حل المشكلات، التعبيرات، أدوات حل المشكلات، الخوارزميات، المخططات الانسيابية، الرمز الزائف، هياكل منطق البرمجة (متسلسلة، قرارات، حلقات)، المصفوفات.

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

1. David A. Freitag, Programming and Problem-Solving: Key Concepts and Program Structures, 4th edition, independently published, 2021

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

1. Maureen Sprankle& Jim Hubbard ,Problem solving and Programming concepts, 9th edition, Prentice Hall, 2012

Course Educational Objectives (CEOs):

1.	**Understand the basic concepts of computer organization, types of programming language, and translators**
2.	**Demonstrate problem-solving tools (algorithms, flowcharts, and pseudo-code) for computing problems**
3.	**Illustrate programming control structures (sequence, selection, and repetition, loops) used in problem-solving**
4.	**Illustrate the data structures (arrays, tables, objects) that could be used in computing problems.**
5.	**Design solutions for simple computing problems using problem-solving tools**
6.	**Write a program that interprets a given algorithm, flowchart, or pseudo-code**

Intended Learning Outcomes (ILO's):

	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**
A	**Knowledge and Understanding:**				
1. A1	**Explain the fundamental concepts of computer organization, programming languages, and translators. (ILO1)**	**1,2**	**PLO1**	**2**	**K**
2. A2	**Identify data types, data structures, and programming logic structures (sequential, decision, and loops) that could be used in computing problems. (ILO2)**	**3,4**	**PLO1**	**2**	**K**
B	**Intellectual skills:**				
3. B1	**Apply problem-solving tools to solve simple computing problems (algorithms, flowcharts, and pseudo-code) (ILO3)**	**2,3**	**PLO2**	**3**	**S**
C	**Subject-specific skills:**				
4. C1	**Design algorithm, flowchart, and pseudo-code for simple computing problems. (ILO4)**	**5**	**PLO2**	**3**	**S**
D	**Transferable skills:**				
5. D1	**Develop a simple program (in C++) to solve a computing problem based on the algorithm, flowchart, or pseudo-code (ILO5)**	**6**	**PLO2**	**6**	**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 (CIS) program will demonstrate:		Descriptors**		
		K	S	C
1.	**Analyse a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.**	✓		
2.	**Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.**		✓	
3.	Communicate effectively in a variety of professional contexts.			✓
4.	Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.			✓
5.	Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.			✓
6.	**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 (Asynchronous)	Second Hour (synchronous)	Third Hour (synchronous)	Ach. ILOs	Ach. PLOs	Descriptors *
1	Introduction to problem-solving & programming (Video) ***Acquire+practice***	-Assembly language -High-level language -OOP ***Acquire+Discussion***	-Translators (Compiler, interpreter) ***Acquire+Discussion***	A1	PLO1	K
2	Beginning Problem-Solving Concepts for the Computer-Data types and operators (Video) (***Acquire+practice)***	-Hierarchy of Operations -Expressions & Equations -Evaluating a Mathematical Expression ***(Acquire)***	***Tutorials*** ***(Discussion+Practice)***	A2	PLO1	K
3	Organizing the solution using Problem-solving tools (Video) (***Acquire+practice)***	***Tutorials-PAC and IPO*** ***(Discussion+Practice)***	***Tutorials-Algorithms*** ***(Discussion+Practice)***	B1	PLO2	S
4	An Introduction to Programming Structure: **Sequence** (Video) (***Acquire+practice)***	***Tutorials- program structure-sequential flowchart (Discussion+Practice)***	***Tutorials- program structure-sequential algorithm (Discussion+Practice)***	A2 B1	PLO1 PLO2	K S
5	Problem-solving with Decision Logic Structure (Video) (***Acquire+practice)***	***Tutorials- program structure- Decision flowchart (Discussion+Practice)***	***Tutorials- program structure- Decision Algorithm (Discussion+Practice)***	A2 B1	PLO1 PLO2	K S
6	Problem-solving with Loops Logic Structure (Video) (***Acquire+practice)***	***Tutorials- program structure-Loop flowchart (Discussion+Practice)***	***Tutorials- program structure-loop algorithm (Discussion+Practice)***	A2 B1	PLO1 PLO2	K S
7	***Programming in C Language – simple program (Video)*** (***Acquire + practice)***	***Programming in C How to convert Flowchart to program (practice)***	***Programming in C How to convert Flowchart to program (practice)***	D1	PLO2	S
8	**Assignment (*practice*)**	***Tutorials (Discussion+Practice)***	Mid Exam	C1, D1	PLO2	S
9	**Assignment (*practice*)**	***Tutorials- (Discussion +Practice)***	***Problem-solving with nested Decision Logic Structure* (*Acquire)***	C1, D1	PLO2	S
10	*Problem-solving with Nested Loops (Video) (Acquire + practice)*	*Tutorials- (Discussion +Practice)*	***Tutorials- (Discussion +Practice)***	B1, C1	PLO2	S
11	Assignment *(practice)*	*Programming in C How to convert Flowchart to program (practice)*	***Programming in C How to convert Flowchart to program (practice)***	C1, D1	PLO2	S
12	Arrays *(Video) (Acquire + practice)*	Processing Arrays- One-dimensional array *(Acquire + practice)*	Programming in C- One-dimensional array *(Acquire + practice)*	A2 D1	PLO1 PLO2	K S
13	Assignment (***practice)***	***Tutorials- (Discussion +Practice)***	Processing Arrays- Two-dimensional array *(Acquire + practice)*	A2 D1	PLO1 PLO2	K S
14	Programming in C- Two-dimensional array ***(Video)*** (***Acquire + practice)***	***Tutorials- (Discussion)***	*Tutorials- (practice)*	A2, D1	PLO1 PLO2	K S
15	***Designing Modules: Local & Global Variables***	***Tutorials- (Discussion)***	***Tutorials- (Practice)***	C1, D1	PLO2	S
16	**Final**					

* **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) **20%**
- Midterm **30%**
- 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
- 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	**Venus W. Samawi**	**Completed Date**	2022 / 3 /10
		Signature	

Received by (Department Head)	**Faisal Alzyoud**	**Received Date**	2022 / 3 /10
		Signature	