1.	Course title	Computer organization
2.	Course number	1901322
3.	Credit hours (theory, practical)	3
	Contact hours (theory, practical)	3
4.	Prerequisites/corequisites	Digital Design (1901204)
5.	Program title	B.Sc. in Computer Science
6.	Program code	01
7.	Awarding institution	The University of Jordan
8.	School	King Abdullah II School of Information Technology
9.	Department	Computer Science
10.	Level of course	Second year
11.	Year of study and semester (s)	2022/2023 – First semester
12.	Other department(s) involved in teaching the course	-
13.	Main teaching Language	English
14.	Teaching methodology	☐ asynchronous ☒ synchronous
15.	Electronic platform(s)	☒Moodle ☒Microsoft Teams ☐Skype ☐Zoom ☒Others: Email
16.	Date of production/revision	02/10/2022

17.Course Coordinator: Sami Serhan

Computer Science Department, Office no. 107, 1st floor
Phone: +9625355000. Extension: 22574
Email: samiserh@ju.edu.jo
Office hours: 8:30-09:30 (Sun, Mon, Tue)

18.Other instructors:

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19.Course Description:

Introduction to computer organization, Main concepts and principles. CPU: execution unit and control unit. Main memory organization. I/O organization. Computer arithmetic. Introduction to parallel processing.

20. Course aims and outcomes:

A- Aims:

The main goal of this course is to teach students the foundation of computer organization, the structure and behavior of the various functional units of the computer and how they interact to provide the processing needs of the user. The course aims to provide students with sufficient background necessary to understand the hardware operation of digital computers.

Objectives include enabling students to:

1. Learn about computer functional modules.
2. Understand the algorithms used in computer arithmetic.
3. Understand the techniques used in designing a digital computer.
4. Understand the concepts related to computer architecture.
5. Understand the basics of parallel processing.

B- **Intended Learning Outcomes (ILOs):**

A- Knowledge and Understanding: Students should …

A1) Learn the concepts of computer organization.
A2) Know the important principles and definitions of computer architecture.

B- Intellectual skills: with the ability to …

B1) Compare and analyse the techniques used in the different computer functional modules.
B2) Apply the appropriate tools to a digital computer design.

C- Subject specific skills – with ability to …

C1) Work on the implementation of the algorithms of the computer arithmetic.
C2) Translate the learned concepts and ideas into practice.
C3) Understand the main attributes of a computer system architecture.

D- Transferable skills – with ability to

D1) Possess good knowledge of the concepts of computer architecture.
D2) Develop advanced techniques, tools and algorithms into complete projects.
D3) Choose the appropriate computer functional module for a certain project.

21.Topic Outline and Schedule:

Topic	Evaluation Methods	Teaching Methods*/platform	References	New ABET SOs	Lecture	Week
Topic 1 **Introduction: main definitions, computer system architecture attributes.** **Topic 2** Computer structures: Instruction formats and addressing modes.	in class questions	Synchronous lecture/ (MS-Teams)	Chapter 8	1,3	1.1	1-2
		Synchronous lecture/ (MS-Teams)			1.2	
		Synchronous lecture/ (MS-Teams)			1.3	
		Synchronous lecture/ (MS-Teams)			2.1	
		Synchronous lecture/ (MS-Teams)			2.2	
		Synchronous lecture/ (MS-Teams)			2.3	
Topic 3 Execution unit: register transfer language, ALU, shifters. Topic 4 Hardwired control unit Control signals & timing signals	in class questions **Assignment 1: Topics 2+3** **<u>Quiz 1</u>**: **Topics 1-4**	Synchronous lecture/ (MS-Teams)	Chapter 4 + Chapter 5	2,4	3.1	3-6
		Synchronous lecture/ (MS-Teams)			3.2	
		Synchronous lecture/ (MS-Teams)			3.3	
		Synchronous lecture/ (MS-Teams)			4.1	
		Synchronous lecture/ (MS-Teams)			4.2	
		Synchronous lecture/ (MS-Teams)			4.3	
		Synchronous lecture/ (MS-Teams)			5.1	
		Synchronous lecture/ (MS-Teams)			5.2	
		Synchronous lecture/ (MS-Teams)			5.3	
		Synchronous lecture/ (MS-Teams)			6.1	
		Synchronous lecture/ (MS-Teams)			6.2	
		Synchronous lecture/ (MS-Teams)			6.3	
Topic 5 Micro programmed control unit Micro instructions Micro programming	in class questions **Assignment 2: Topics 4+5**	Synchronous lecture/ (MS-Teams)	Chapter 7	2,4	7.1	7-9
		Synchronous lecture/ (MS-Teams)			7.2	

			Synchronous lecture/ (MS-Teams)			7.3	
			Synchronous lecture/ (MS-Teams)			8.1	
			Synchronous lecture/ (MS-Teams)			8.2	
			Synchronous lecture/ (MS-Teams)			8.3	
			Synchronous lecture/ (MS-Teams)			9.1	
			Synchronous lecture/ (MS-Teams)			9.2	
			Synchronous lecture/ (MS-Teams)			9.3	
	Topic 6 Computer arithmetic Fixed-point operations Floating-point operations Decimal arithmetic	in class questions **<u>Quiz 2</u>**: **Topic 6**	Synchronous lecture/ (MS-Teams)	Chapter 10	1,3,5	10.1	**10-12**
			Synchronous lecture/ (MS-Teams)			10.2	
			Synchronous lecture/ (MS-Teams)			10.3	
			Synchronous lecture/ (MS-Teams)			11.1	
			Synchronous lecture/ (MS-Teams)			11.2	
			Synchronous lecture/ (MS-Teams)			11.3	
			Synchronous lecture/ (MS-Teams)			12.1	
			Synchronous lecture/ (MS-Teams)			12.2	
			Synchronous lecture/ (MS-Teams)			12.3	
	Topic 7 **Memory organization** **Main memory** **Associative memory** **Cache memory**	in class questions **Assignment 3: Topic 7**	Synchronous lecture/ (MS-Teams)	Chapter 12	1,4,5	13.1	**13-14**
			Synchronous lecture/ (MS-Teams)			13.2	
			Synchronous lecture/ (MS-Teams)			13.3	
			Synchronous lecture/ (MS-Teams)			14.1	
			Synchronous lecture/ (MS-Teams)			14.2	
			Synchronous lecture/ (MS-Teams)			14.3	

Topic 8 **I/O Organization** **Interface unit & I/O methods**	in class questions **Quiz 3**: **Topic 7**	Synchronous lecture/ (MS-Teams)	Chapter 11	1,4	15.1	**15**
		Synchronous lecture/ (MS-Teams)				
		Synchronous lecture/ (MS-Teams)			15.2	
		Synchronous lecture/ (MS-Teams)			15.3	
Topic 9 **Introduction to parallel processing** **Review**	in class questions	Synchronous lecture/ (MS-Teams)	Chapter 13	1,6	16.1	16
		Synchronous lecture/ (MS-Teams)			16.2	
		Synchronous lecture/ (MS-Teams)			16.3	

22. Evaluation Methods and Course Requirements (Optional):

Platform	Week	Topic(s)	Mark	Evaluation Activity
Essay/written	3r^{d}	Topics 1-3	10	Quiz
Essay/written	7th	Topics 1-5	30	Mid
Essay/written	10th	Topic 6	10	Quiz
Essay/written	16th	Topics 1-9	50	Final

23.Course Policies:

A- Attendance policies:

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

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy + Weighting (i.e. weight assigned to exams as well as other student work)

F- Available university services that support achievement in the course:

G- Statement on Students with disabilities

Students with Disabilities: Students with disabilities who need special accommodations for this class are encouraged to meet with the instructor and/or their academic advisor as soon as possible. In order to receive accommodations for academic work in this course, students must inform the course instructor and/or their academic advisor, preferably in a written format, about their needs no later than the 4th week of classes.

24.Required equipment:

students should have a computer, internet connection, webcam, account on a specific software/platform.

25. References:

A- Required book (s), assigned reading and audio-visuals:

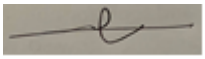
Computer System Architecture, Mano, Latest edition, Prentice Hall..

B- Recommended books, materials, and media:

- Computer Organization, Hamacher, McGraw-Hill.
- Structured computer organization, Tanenbaum, Prentice Hall.

26. Additional information:

Date: 02/10/2022

Name of Course Coordinator: Sami Serhan Signature: 

Head of curriculum committee/Department: ---------- Signature: ----------

Head of Department: ---------- Signature: ----------

Head of curriculum committee/Faculty: ---------- Signature: ----------

Dean: ---------- -Signature: ----------