جامعة الزيتونة الأردنية
Al-Zaytoonah University of Jordan

Course Syllabus

According to JORDAN National Qualification Framework (JNQF)

Course Name: Computer Organization and Architecture

Course Number: 0130212

General Course Information:

Course Title	Computer Organization and Architecture
Course Number	0130212
Credit Hours	3 credit hours
Education Type	Traditional learning
Prerequisites/Co-requisites	Digital Logic Design(0130111)
Academic Program	Computer Science
Program Code	130
Faculty	Faculty of Science and Information Technology
Department	Computer Science
Level of Course	3
Academic Year /Semester	2024/2025 2nd Semester
Awarded Qualification	BS'c
Other Department(s) Involved in Teaching the Course	-
Language of Instruction	English
Date of Production/Revision	2024-2025 / 10/3/2025

Course Coordinator:

Coordinator's Name	Dr. Maher Nabulsi
Office No.	9316
Office Phone Extension Number	-
Office Hours	11-12:30 Sunday-Wednesday
E-mail	nabulsi@zuj.edu.jo

Other Instructors:

Instructor Name	
Office No.	
Office Phone Extension Number	
Office Hours	
Email	

Course Description *(English/Arabic)*:

English	Computer Organization and Architecture is a fundamental course in the field of computer science and engineering. This course is designed to provide students with a deep understanding of how computers are organized at both the hardware and software levels.
Arabic	تنظيم الكمبيوتر والهندسة المعمارية هو مادة أساسية في مجال علوم الكمبيوتر والهندسة، تم تصميم هذا المساق لتزويد الطلاب بفهم عميق لكيفية تنظيم أجهزة الكمبيوتر على مستوى الأجهزة والبرامج.

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

1.- Essentials of Computer Organization and Architecture", 6th ed, Jones & Bartlett Learning, 2023.

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

1. David Harris and Sarah Harris, "Digital design and computer architecture", 2nd ed., Morgan Kaufmann, 2012.
2. John L. and David A., 'Computer Architecture " , 5th ed, Morgan Kaufmann, 2011 .
3. Linda Null and Julia Lobur, "Essentials of Computer Organization and Architecture", 3rd ed, Jones & Bartlett Learning, 2010.

Course Educational Objectives (CEOs):

1.	**Providing the basic hardware components and simple computer architecture.**
2.	Describing the simple computer organization.
3.	Providing the concept of addressing architectures
4.	Providing knowledge of parallel processing and pipelining

Intended Learning Outcomes (ILO's):

Intended learning outcomes (ILOs)		Relationship to CEOs	Contribution to PLOs	Bloom Taxonomy Levels*	JNQF Descriptors**
1.	K- Knowledge and Understanding				
2. 3. ILO1-K1	Learning about the basic hardware components and simple computer organization and architecture.	CEO1	PlO1-k	Remembering	K
4. 5. ILO2-K2	Providing knowledge about parallel processing and pipelining.	CEO2	PlO2-k	understanding	K
	S- Intellectual skills				
6. 7. ILO3-S1	Use register transfer language to specify micro-operations and design an ALU circuit.	CEO3	PlO3-s	Applying	S
8. 9. ILO4-S2	Constructing the control unit and control signals.	CEO4	PlO4-s	Applying	S
10. 11. ILO5-S3	Understand the instruction cycle and parallel processing.	CEO1	PlO7-s	Understanding	S
	C- Competencies				
12. 13. ILO6-C1	The ability to Explain simple computer organization and architecture.	CEO3	PlO5-c	Understanding	C
14. 15. ILO7-C2	The ability to use different addressing modes and recognize parallel processing and instruction cycles.	CEO4	PlO6-c	Evaluating	C
	D- Transferable skills				
16. D1					

***Bloom Taxonomy Levels:**

Level #	1	2	3	4	5	6

Level Name	Remembering	Understanding	Applying	Analyzing	Evaluating	Creating
** Descriptor (National Qualification Framework Descriptors): K: Knowledge, S: Skill, C: Competency.						

Program Learning Outcome (PLOs):

(PLOs)		JNQF Descriptors**		
		K	S	C
PLO1-K	Knowledge of professional ethics, social responsibility, and the regulations governing them.	√		
PLO2-K	Understanding various programming techniques, the stages of software development, and the fundamental principles of security.	√		
PLO3-S	Skill in applying mathematical concepts to analyze and design algorithms and verify their correctness		√	
PLO4-S	Skill in using different programming languages and applying them to develop software and computer applications.		√	
PLO5-C	The ability to analyze, design, and develop effective and reliable computer programs that meet user requirements and adhere to professional ethics.			√
PLO6-C	The ability to keep up with continuous advancements in computer science, innovate, and work independently or as part of a team.			√
PLO7-T	The ability to work collaboratively, communicate effectively, and demonstrate teamwork spirit.		√	

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

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

- ☒ **Face to Face (F2F)**
- ☐ **Hybrid** *(One – To - One)*
- ☐ **Online**

Schedule of Simultaneous and their Topics:

Week	First Lecture (F2F)	Second Lecture (Activity)	ILOs	PLOs	JNQF Descriptors*
1	Register transfer and micro-operations.	Video about Register transfer and micro-operations.	ILO1-k	Plo1-k	K
2	Arithmetic circuit.	Solved Example about the Arithmetic circuit.	ILO2-k	Plo1-k	K
3	Bus system.	Video about Bus system.	ILO5-s	Plo2-k	K
4	A simple computer architecture	Video about simple computer architecture	ILO1-k	Plo2-k	K
5	Control unit	Control unit	ILO5-s	Plo5-c	C

6	Control unit.	Assignment about Control unit.	ILO4-s	Plo3-s	S
7	Instruction cycle.	Instruction cycle.	ILO5-S	Plo4-s	S
Midterm Exam (30%)					
9	Instruc tion cycle	Assignment about instruction cycle.	ILO5-S	Plo4-s	S
10	Addressing architectures	Addressing architectures	ILO7-c	Plo5-c	C
11	Parallel processing.	Video about Parallel processing.	ILO7-c	Plo6-c	C
12	CISC and RISC CPUs.	An assignment about CISC and RISC CPUs.	ILO6-c	Plo6-c	C
13	Modes of transfer	Modes of transfer	ILO6-c	Plo5 -c	C
14	Modes of transfer	Assignment about Modes of transfer	ILO6-c	Plo6-c	C
15	**Projects Discussion**				
16	**Final Exam**				

* **K: Knowledge, S: Skills, C: Competency**

Teaching Methods and Assignments:

Development of ILOs is promoted through the following teaching and learning methods:

- Lecture.
- flipped learning.
- learning through projects.
- learning through problem solving.
- participatory learning

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 ZUJ E-Learning Platform at https://exams.zuj.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	**Dr. Maher Nabulsi**	**Completed Date**	**3 / 5 / 2025**
		Signature	

Received by (Department Head)		**Received Date**	/ /
		Signature	