COURSE DESCRIPTIONS

Faculty	Science and Information Technology				
Department	Computer Science			NQF level	7
Course Title	**Computer Organization and Architecture**	Prerequisite	501305	Prerequisite	185101
Credit Hours	3	Theory	3	Practical	0
Course Leader		email			
Lecturers	Dr. Aymen Abu-Errub	email	a.abu-errub@jadara.edu.jo		
Lecture time	Multiple Sections	Classroom	Blended		
Semester	First 2025-2026	Production	2020	Updated	2024/2025
Types of Teaching	☐ Face-to-Face ☐ Online ☒ Blended				

Course Description and Overview
This course aims to provide students of computing with understanding of digital computer system's components, their characteristics, and their performance. It is important to understand Computer Architecture and Organization in order to structure a program so that it runs efficiently on a real machine. And when selecting a system to use, it is important to understand the tradeoff among various components, so you can accurately compare competing systems, and understand technical literature on new computer systems. This course will cover the basic concepts of Computer Architecture that are important to understand, including the CPU, memory systems including caching memory, and input/output subsystems.

Course Objectives

- To let students, acquire basic concepts of computer architecture and organization understanding and computer system design.
- Introduce memory used in modern computers and how to evaluate digital computer components.

Learning Outcomes
A. Knowledge - Theoretical Understanding
a1. **Define** the basic components of a digital computer, operations of the computer and concepts involved with Computer Architecture and Organization. (K1)
B. Knowledge - Practical Application
a2. **Solve** instruction set, mapping function, replacement and arithmetic problems. (K4)
C. Skills - Generic Problem Solving and Analytical Skills
b1. **Analyze** a computer system's expected performance. (S1)
D. Skills - Communication, ICT, and Numeracy
E. Competence: Autonomy, Responsibility, and Context

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Teaching and Learning Methods
- Lectures and problem solving

Assessment Methods
- Quizzes and Assignments
- Midterm exam, Final exam

Course Contents					
Week	**Hours**	**CLOs**	**Topics**	**Teaching & Learning Methods**	**Assessment Methods**
1	3	a1	Syllabus, Course Schedule; Chapter 1: **Introduction**: Organization and Architecture, Structure and Function	**Blended**	
2-4	6	a1	Chapter 1 Computer Abstractions and Technology	**Blended**	
5-7	9	a1	Chapter 2: Instructions: Language of the Computer	**Blended**	Assignment
8	9	a1, a2 b1	Chapter 3: Arithmetic for Computers	**Blended**	Assignment Quiz
MIDTERM EXAM					
9-11	6	a1, a2 b1	Chapter 4: **The Processor**	**Blended**	Assignment
12-14	6	a1, a2 b1	Chapter 5: **Large and Fast: Exploiting Memory Hierarchy**	**Blended**	Assignment Quiz
FINAL EXAM					

	Infrastructure
Textbook	Computer Organization and Design MIPS Edition: The Hardware/Software Interface (The Morgan Kaufmann Series in Computer Architecture and Design) 5th Edition
References	
Required reading	
Electronic materials	
Other	

Course Assessment Plan

Assessment Method	Grade	CLOs		
		a1	a2	b1
Midterm	30	10	10	10
Final Exam	40	10	20	10
Coursework	30			
Assignments	15	5	5	5
Case study				
Discussion and interaction				
Group work activities				
Lab tests and assignments				
Presentations	5	2	3	
Quizzes	10	5	5	
Total	**100**	**100**	30	40

Coursework Assessment Methods (row label spanning the coursework sub-methods)

Plagiarism

Plagiarism is claiming that someone else's work is your own. The department has a strict policy regarding plagiarism and, if plagiarism is indeed discovered, this policy will be applied. Note that punishments apply also to anyone assisting another to commit plagiarism (for example by knowingly allowing someone to copy your code).

Plagiarism is different from group work in which a number of individuals share ideas on how to carry out the coursework. You are strongly encouraged to work in small groups, and you will certainly not be penalized for doing so. This means that you may work together on the program. What is important is that you have a full understanding of all aspects of the completed program. In order to allow proper assessment that this is indeed the case, you must adhere strictly to the course work requirements as outlined above and detailed in the coursework problem description. These requirements are in place to encourage individual understanding, facilitate individual assessment, and deter plagiarism.