2023
TP-153

Course Specification
(Bachelor)

Course Title:	Computer Organization
Course Code:	CS322
Program:	Computer Science
Department:	Computer Science
College:	College of Computer and Information Sciences
Institution:	Majmaah University
Version:	1
Last Revision Date:	*Pick Revision Date.*

Table of Contents

A. General information about the course:

1. Course Identification

1. Credit hours: (3 (3,0,1))					
2. Course type					
A.	☐University	☐College	☒ Department	☐Track	☐Others
B.	☒ Required		☐Elective		
3. Level/year at which this course is offered: (5)					
4. Course general Description:					
The course aims to cover the topics such as Introduction to Computer Organization, Binary Numbers, Assembly Language, Binary Arithmetic: Multiplication, Boolean Algebra, Logic Design, Instruction set architecture, Memory Storage, Assembly Language Programming, Floating Point Numbers, Reduced Instruction Set Computers (RISC), Alternative Architectures					
5. Pre-requirements for this course (if any)**:**					
6. Pre-requirements for this course (if any)**:**					
MH 121 – Discrete Mathematics					
7. Course Main Objective(s):					
The course aims to enables the students to learn the internal working of a computer. The students study the basics of memory organization, number systems and their conversions, design of logic circuits and functioning of CPU.					

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1	Traditional classroom	60	100
2	E-learning		
3	Hybrid • Traditional classroom • E-learning		

No	Mode of Instruction	Contact Hours	Percentage
4	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	**Lectures**	45
2.	**Laboratory/Studio**	
3.	**Field**	
4.	**Tutorial**	15
5.	**Others (specify)**	
Total		60

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	**Knowledge and understanding**			
1.1				
1.2				
...				
2.0	**Skills**			
2.1	CLO1- Identify the basic components of computer system and understand the specification of a PC	S1	Classroom Lectures, Group Discussions, Lab demonstrations, Home assignments, Tutorial classes	Test, Mid Exam, Final Exam, Assignment
2.2	CLO2- Understand the details of Numbering system and conversion	S1	Classroom Lectures, Group Discussions, Lab demonstrations, Home assignments, Tutorial classes	Test, Mid Exam, Assignment, Final Exam

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
2.3	CLO3- Design logic circuits by applying the concepts of Boolean Algebra and K-Maps	S2	Classroom Lectures, Group Discussions, Lab demonstrations, Home assignments, Tutorial classes	Test, Mid Exam, Final Exam
2.4	CLO4- Apply assembly language programming skills to solve problems.	S1	Classroom Lectures, Group Discussions, Lab demonstrations, Home assignments, Tutorial classes	Exercises Homework
2.5	CLO5- Describe the impact of memory caching and hierarchy options on the design of computer systems.	S1	Classroom Lectures, Group Discussions, Lab demonstrations, Home assignments, Tutorial classes	Exercise, Assignment
3.0	**Values, autonomy, and responsibility**			
3.1				
3.2				
...				

C. Course Content

No	List of Topics	Contact Hours
1.	Main computer components, Computer Level Hierarchy, Von Neumann Model	4
2.	Data Representation: Binary Numbers, converting between Binary, decimal, and Hexadecimal, Signed binary representation	4
3.	Floating point representation,	4
4.	Computer Arithmetic (addition, subtraction, multiplication)	4
5.	Boolean algebra and Logic Gates	4
6.	Karnaugh maps	4
7.	Design of combinational Circuits, Encoder, decoder, MUX, DMUX	6

8.	MARIE Instruction Set Architecture,	4
9.	MARI Assembly Language Programming	6
10.	Cache Memory organization	6
11.	Virtual memory organization	4
12.	Reduced Instruction Set Architecture	6
13.	Parallel and Multiprocessor Architectures	4
Total		**60**

D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Assignments / Class discussions	Week4, Week 9	10%
2.	Attendance / Class Participation	Throughout	5%
3.	Quizzes	Week 3,9	15%
4.	Mid-Exam	Week 8	20%
5.	Exercises	Week 3, 9	10%
6.	Final Exam	Week 16	40%

*Assessment Activities (i.e., Written test, oral test, oral presentation, group project, essay, etc.).

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	Computer Organization and Architecture: Designing for performance by William Stallings, Pearson, Global Edition, 2016, ISBN-13: 978-9332570405
Supportive References	1. The Essentials of Computer Organization and Architecture, Linda Null and Julia Lobor, Jones and Bartlett 2018. ISBN-13: 978-1284123036 2. Logic & Computer Design Fundamentals (5th Edition) by by M. Morris R. Mano , Charles R. Kime, Tom Martin, Pearson, 2015. ISBN-13: 978-0133760637
Electronic Materials	https://marie.js.org/
Other Learning Materials	

2. Required Facilities and equipment

Items	Resources
facilities (Classrooms, laboratories, exhibition rooms, simulation rooms, etc.)	Classroom, laboratory
Technology equipment (projector, smart board, software)	Data show, smart board
Other equipment (depending on the nature of the specialty)	Digital training board

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching	Students	Indirect Method / Student Feedback
Effectiveness of Students assessment	Faculty	Direct Method
Quality of learning resources	Students and Faculy	Indirect Method / Survey
The extent to which CLOs have been achieved	Faculty	Direct Method
Other		

Assessors (Students, Faculty, Program Leaders, Peer Reviewer, Others (specify)

Assessment Methods (Direct, Indirect)

G. Specification Approval

COUNCIL /COMMITTEE	**CS COUNCIL**
REFERENCE NO.	
DATE	