University : Benha university

Faculty : Faculty of Engineering at Shoubra

Department : Electrical Engineering Department

1- Course Data

Course Code : ECE213C	Course Title : Computer Organization 1	Study Year : Second Year

Specialization :

Date of specifications approval: 20/6/2010

Teaching Hours:

Lecture : 3	Tutorial : 2	Practical :

2- Course Aim

For students undertaking this course, the aims are to:

2.1- Computer systems involve architecture design at many levels. We will focus on understanding the interaction between computer hardware and software at various levels. The course covers the concepts of Computer technology, Performance Evaluation, Instruction set design, Data path, memory systems and Control unit design of processors.

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:

a-1. Demonstrate concepts and theories of mathematics and sciences, appropriate to the computer organization. (a2)

a-2. Identify the principles of design including elements design, process and/or a system in the computer organization structure.(a5)

a-3. Discover current engineering technologies in the computer organization. (a9)

b- Intellectual Skills

At the end of this course, the students will be able to:

b-1 . Select appropriate solutions for problems of Arithmetic Logic Unit Organization based on analytical thinking.(b3)

b-2 . Think in a creative and innovative way in problem solving and design in computer organization.(b4)

b-3 . Combine, exchange, and assess different ideas, views, and knowledge from a range of sources in the field of computer organization . (b5)

c- Professional Skills

On completing this course, the students are expected to be able to:

c-1 . Apply knowledge of mathematics, science, information technology, design, business context and engineering practice to define computer organization.(c1)

c-2 Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to computer organization and develop required computer programs.(c6)

d- General Skills

At the end of this course, the students will be able to:

d-1 . Demonstrate efficient IT capabilities. (d4)

d-2 . Write technical reports and presentation. (d10)

d-3 . Develop skills related to creative and critical thinking as well as problem solving (d12)

4- Course Contents

No.	Topics
1	Basic Structure of Computers
2	Instruction Sets
3	Addressing Modes
4	Central Processing Unit organization
5	Control Unit organization
6	Arithmetic Logic Unit organization
7	The Memory Organization
8	Cache Memory
9	Virtual Memory
10	Input/Output Organization

5- Teaching and Learning Methods

5.1- Modified Lectures

5.2- Practical training / laboratory

5.3- Class activity

5.4- Assignments / homework

6- Teaching and Learning Methods of Disables

6.1- none

7- Student Assessment

a- Student Assessment Methods

1	Assignments to assess knowledge, intellectual skills and proffesional and practical skills.
2	Quiz to assess knowledge, intellectual skills and proffesional and practical skills.
3	Mid-term exam to assess knowledge, intellectual skills and proffesional and practical skills.
4	Oral exam to assess proffesional, practical, general and transferable skills.
5	Final exam to assess knowledge, intellectual skills and proffesional and practical skills.

b- Assessment Schedule

No.	Assessment	Week
1	Assessment	2, 5, 9, 11
2	Quizzes	4, 6, 10, 12
3	Mid-term exam	8
4	Oral Exam	14
5	Final exam	15

c- Weighting of Assessments

Assessment	Weight
Mid_Term Examination	10 %
Final_Term Examination	60 %
Oral Examination	10 %
Practical Examination	10 %
Semester work	5 %

Other types of assessment	5 %
Total	100 %

8- List of References

a- Course Notes
1- Handouts prepared by the instructor.

b- Books
1- David A. Patterson, John L. Hennessy , Computer Organization and Design, Morgan Kaufmann, fifth Edition , 2012

c- Recommended Books
1- C. Hamacher, Z. Vranesic, and S. Zaky,Computer Organization and Embedded Systems , McGraw-Hill Science/Engineering/Math; 6 edition (January 27, 2011)

- Course Coordinator : Ass.Prof / AbdulWahab Kamel Al-Sammak

- Head of Department : Prof/ Sayed Abo-Elsood Sayed Ward

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Matrix of Knowledge and Skills of the course

week	Topics	No of hours	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Basic Structure of Computers	3	A-1	B-3	C-1	D-1
2	Instruction Sets	3	A-1	B-1, B-2	C-1,C-2	D-1,D-3
3	Addressing Modes	3	A-1	B-1, B-2	C-1,C-2	D-1,D-3
4	Central Processing Unit organization	6	A-2,A-3	B-2	C-1	D-1
5	Central Processing Unit organization	6	A-2,A-3	B-2	C-1	D-1
6	Control Unit organization	6	A-2,A-3	B-2	C-1	D-1
7	Control Unit organization	6	A-2,A-3	B-2	C-1	D-1
8	Mid Term					
9	Arithmetic Logic Unit Organiz	6	A-2	B-1,B-2	C-1	D-1,D-3

	ation					
10	Arithme tic Logic Unit Organiz ation	6	A-2	B-1,B-2	C-1	D-1,D-3
11	The Memory Unit Organiz ation	3	A-2,A-3	B-1, B-2	C-1	D-1,D-2,D-3
12	The Cache Memory	3	A-2,A-3	B-1, B-2	C-1	D-1,D-2,D-3
13	The Virtual Memory	3	A-2,A-3	B-1, B-2	C-1	D-1,D-2,D-3
14	Input/O utput Organiz ation	3	A-2,A-3	B-3	C-1	D-1
15	final exam					

-Course ILOS VS Program ILOS:

	A1	A4	A8	B2	B3	B4	C1	C14	D4	D10	D12
A1	√										
A2		√									
A3			√								
B1				√							
B2					√						
B3						√					
C1							√				
C2								√			
D1									√		
D2										√	
D3											√

- **Course Coordinator :   Ass. Prof. Abdelwahab kamel elsammak**

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Matrix of course content and ILO's

Content	A-1	A-2	A-3	B-1	B-2	B-3	C-1	C-2	D-1	D-2	D-3
Basic Structure of Computers	√					√	√		√		
Instruction Sets	√			√	√		√	√	√		√
Addressing Modes	√			√	√		√	√	√		√
Central Processing Unit organization		√	√		√		√		√		
Central Processing Unit organization		√			√		√		√		
Control Unit organization		√			√		√		√		
Control Unit organization		√			√		√		√		
Mid Term											
Arithmetic Logic Unit Organization		√		√	√		√		√		√
Arithmetic Logic Unit Organization		√		√	√		√		√		√
The Memory Unit Organization		√		√	√		√		√	√	√
The Cache Memory		√		√	√		√		√	√	√
The Virtual Memory		√		√	√		√		√	√	√
Input/Output Organization		√				√	√		√		

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Matrix of course aims and ILO's

Course aims	ILO'	ILO'	ILO'	ILO'	ILO'	ILO'	ILO'	ILO'	ILO'	ILO'	ILO'

	s 1	s 2	s 3	s 4	s 5	s 6	s 7	s 8	s 9	s 10	s 11
Understand the interaction between computer hardware and software at various levels.	A-1	A-3	B-1	B-3	C-14	D-1					
Cover the concepts of Computer technology, Performance Evaluation, Instruction set design, Data path, memory systems and Control unit design of processors.	A-1	A-2	A-3	B-1	B-2	B-3	C-1	C-14	D-1	D-2	D-3