



Shoubra Faculty of Engineering

Model No.12

Course Specifications : Microprocessor Systems (2014-2015)

University : Benha university

Faculty : Shoubra Faculty of Engineering

Department : Electrical Engineering Department

1- Course Data

Course Code : ECE 311c Course Title : Microprocessor Systems Study Year : Third Year Specialization : Teaching
Hours:
Lecture : 4 Tutorial : 0 Practical : 2

2- Course Aim

For students undertaking this course, the aims are to:

- 2.1- To ensure that the students have an understanding of the standards of Intel microprocessor, and ethical responsibility in the practice of electronics and communication engineering.
- 2.2- Understand the Intel microprocessor functionality that can be efficiently used in many systems and applications.
- 2.3- enable students to program the Intel microprocessor.
- 2.4- Use Assembly language in designing and implementing various applications.

3- Intended Learning Outcomes of Course (ILOS)

a- Knowledge and Understanding

On completing this course, students will be able to:

- a-1 Define concepts and theories of mathematics and electrical signals , appropriate to the Microprocessor system.(a1)
- a-2 Describe principles of design microprocessor and its electronic components and architecture along with different models . (a4)
- a-3 Describe principles of analyzing control operations in microprocessor system with performance evaluation.(a16)

b- Intellectual Skills

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

- b- 1 Employ assembly programming language in developing programs to run on microprocessor systems engineering to solve problems. (b1)
- b- 2 Combine, exchange, and assess different tasks, operations, views, and knowledge from a range of sources related to microprocessor systems. (b4)
- b-3 Assess and evaluate the characteristics and performance of different microprocessor models and compete against different tasks . (b5)
- b-4 Plan, conduct and write a report on a project or assignment related to microprocessor systems tasks. (b14)

c- Professional Skills

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

- c- 1 - Apply knowledge of mathematics, electronics, different designs, business context to microprocessor systems. (c1)

- c- 2 - Professionally merge the engineering knowledge, understanding, and feedback to improve design, performance and reduce cost. (c2)
- c- 3 - develop programs professionally, and carry out specialized and optimized engineering designs related to microprocessor systems. (c3)
- c- 4 -Practice the neatness and aesthetics in design and approach. (c4)

d- General Skills

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

- d- 1 - Collaborate effectively within multidisciplinary team. (d1)
- d- 2 - Work in stressful environment and within constraints. (d2)
- d- 3 - Communicate effectively. (d3)
- d-4 - Demonstrate efficient IT capabilities. (d4)

4- Course Contents

No.	Topics
1	Microprocessor history
2	Microprocessor components
3	Memory interfacing
4	I/O interfacing
5	DMA and IRQ
6	Introduction to assembly language
7	using programming packages(Turbo assembler) in analyzing and designing assembly programs

5- Teaching and Learning Methods

- 5.1- Lectures
- 5.2- Practical training / laboratory
- 5.3- Class presentations
- 5.4- Assignments / homework/ Course project

6- Teaching and Learning Methods of Disables

- 6.1- not applied

7- Student Assessment

a- Student Assessment Methods

1	Assignments to assess knowledge and intellectual skills
2	Quiz to assess knowledge, intellectual and professional skills.
3	Mid-term exam to assess knowledge, intellectual, professional and general skills.
4	End of term project presentation to assess knowledge , intellectual and presentation skills .
5	oral exam to assess knowledge, intellectual, professional and general skills.
6	Final exam to assess knowledge, intellectual, professional and general skills.

b- Assessment Schedule

No.	Assessment	Week
1	Quizzes	3, 5,7
2	Mid-term exam	8
3	Report, Project Discussion	10
4	Oral Assessment	14
5	Final exam on	15

c- Weighting of Assessments

Assessment	Weight
Mid_Term Examination	20 %
Final_Term Examination	60 %
Oral Examination	20 %
Practical Examination	0 %
Semester work	0 %
Other types of assessment	0 %
Total	100 %

8- List of References**a- Course Notes**

1- Course notes prepared by instructor.

b- Books

1- Barry B. Berry, Intel microprocessor 8th Edition , 2009.

- **Course Coordinator :** Dr. Adly S. Tag EL-dien

- **Head of Department :** Prof. Dr. Sayed Aboo-Elsood Ward



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Matrix of Knowledge and Skills of the course

No.	Topics	week	Basic Knowledge	Intellectual Skills	Professional Skills	General Skills
1	Introduction to	1	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
2	Different microcomputer-based Applications	2	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
3	Interfacing architecture	3	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
4	peripheral interfaces	4	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
5	Introduction to Pentium processors	5	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
6	functional unit of Pentium processors	6	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
7	Midterm exam	7				
8	Cache overview and code/data cache	8	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
9	investigate assembly language programming	9	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
10	Using computer simulation	10	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
11	Microprocessor Input and Output	11	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
12	Symmetric Cryptology in designing secure Microprocessor application	12	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
13	Asymmetric Cryptology in designing secure Microprocessor application	13	a1,a2,a3	b1.b2,b3,b4	c1,c2,c3,c4	d1,d2,d3,d4
14	Oral Exam	14	a1,a2	b1.b2	c2,c3	d1,d2
15	Final Exam	15	a1,a2	b1.b2	c2,c3	d1,d2

Matrix of course content and ILO's

Course Title: Microprocessor Systems **Code:** ECE 311C **Lecture:-**4 **Tutorial :** **Practical:** 2 **Total:** 6

Program on which the course is given: M.Sc. Electrical Engineering (Computer Engineering)

Major or minor element of program: Major

Department offering the program: Electrical Engineering Department

Department offering the course: Electrical Engineering Department

Academic year / level: 2012-2013 first semester

Date of specifications approval: 20/6/2010

Course content	A1	A4	A16	B1	B4	B5	B14	C1	C2	C3	C4	D1	D2	D3	D4
Microprocessor history	✓			✓						✓		✓	✓	✓	
Microprocessor components		✓		✓	✓		✓		✓	✓	✓		✓	✓	
Memory interfacing	✓		✓		✓	✓	✓			✓		✓	✓	✓	✓
I/O interfacing	✓	✓			✓	✓	✓	✓	✓	✓	✓		✓	✓	
DMA and IRQ	✓		✓		✓		✓			✓		✓	✓	✓	
Introduction to assembly language		✓	✓	✓	✓	✓			✓	✓	✓		✓	✓	
using programming packages(Turbo assembler) in analyzing and designing assembly programs	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓

Matrix of course aims and ILO's

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To ensure that the students have an understanding of the standards of Intel microprocessor, and ethical responsibility in the practice of electronics and communication engineering.	✓		✓	✓			✓			✓		✓	✓	✓	
Understand the Intel microprocessor functionality that can be efficiently used in many systems and applications.		✓	✓	✓		✓			✓		✓	✓			✓
Enable students to program the Intel microprocessor.	✓		✓	✓		✓		✓		✓		✓	✓	✓	
Use Assembly language in designing and implementing various applications.	✓	✓		✓	✓		✓	✓	✓		✓	✓		✓	✓

- course ILOS VS Program ILOS:

	A1	A4	A16	B1	B4	B5	B14	C1	C2	C3	C4	D1	D2	D3	D4
A1	√														
A2		√													
A3			√												
B1				√											
B2					√										
B3						√									
B4							√								
C1								√							
C2									√						
C3										√					
C4											√				
D1												√			
D2													√		
D3														√	
D4															√

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