



## Course Specification

**Course Name:** [Computer Architecture ]

**Course Code:** [IT311]

### I. Basic Course Information

Major or minor element of program: [Both Major& Minor]

Department offering the course: [Information Technology Department]

Academic level: [300 Level]

Semester in which course is offered: [First (Fall) Semester]

Course pre-requisite(s): [Logic Design [CS221] ]

Credit Hours: 3

Contact Hours Through:

Lecture	Tutorial *	Practical *	Total
2.5	0.0	1.5	4.0

\* 1.5 hours for **either** Tutorial or Practical

Approval date of course specification: September 2014

### II. Overall Aims of Course

[This course focuses on the core principles and technologies used in designing computers components such as CPU, memory. Storage. It introduces students to understand the main principles of designing and building the different component of computer. In addition, it introduces students to build programs using assembly language. ]

### III. Program ILOs covered by course

Program Intended Learning Outcomes (By Code)			
Knowledge & Understanding	Intellectual Skills	Professional Skills	General Skills
[K1,K6,K16 ]	[I4,I11 ]	[P11,P12,P13,P14 ]	[G1,G5,G9 ]



### Course Specification

#### Intended Learning Outcomes of Course (ILOs)

##### a. Knowledge and Understanding

On completing the course, students should be able to:

- K.1 [ Define the main elements of a computer system.
- K.2 Define the design considerations of each component.
- K.3 Define how instructions are processed and arithmetic carried.
- K.4 Define PC performance and how to enhance it.
- K.5 Define memory hierarchies.
- K.6 Define multiprocessors and clusters. ]

##### b. Intellectual/Cognitive Skills

On completing the course, students should be able to:

- I.1 [ Analyze the performance of an application on a specific architecture.
- I.2 Make basic design choices for architecture components for a given application. ]

##### c. Practical/Professional Skills

On completing the course, students should be able to:

- P.1 [ Estimate performance of a given architecture under different scenarios.
- P.2 Make a design choice of an architecture for a given application.
- P.3 Decide when to use PC clusters.
- P.4 Write assembly language. ]

##### d. General and Transferable Skills

On completing the course, students should be able to:

- G.1 [ Construct rigorous scientific arguments to support their claims.
- G.2 Develop the ability to professionally criticize arguments on a scientific basis.
- G.3 Search and acquire knowledge from external resources. ]

#### IV. Course Matrix Contents

	Main Topics / Chapters	Duration (Weeks)	Course ILOs Covered by Topic (By ILO Code)			
			K & U	I.S.	P.S.	G.S.
1-	[Introduction to computer architecture, CISC and RISC ]	[2 ]	[K1 ]	[ ]	[ ]	[ ]
2-	[Computer Instructions: Assembly Language ]	[2.5 ]	[K3 ]	[I1 ]	[P4 ]	[G3 ]
3-	[Assessing Performance ]	[1 ]	[K4 ]	[I1 ]	[P1 ]	[ ]
4-	[Processor Structure and Management ]	[2 ]	[K2,K3,K6 ]	[I1,I2 ]	[P2 ]	[G1,G2 ]
5-	[Memory Structure and Design ]	[2.5 ]	[K2,K5 ]	[I1,I2 ]	[P2 ]	[G1,G2 ]
6-	[Storage, Network and Peripherals ]	[2 ]	[K2,K6 ]	[I1,I2 ]	[P2 ]	[G1,G2 ]
7-	[Multiprocessors and clustering ]	[1 ]	[K2 ]	[,I2 ]	[P3 ]	[G3 ]
	<b>Net Teaching Weeks</b>	<b>13</b>				



Course Specification

V. Course Weekly Detailed Topics / hours / ILOs

Week No.	Sub-Topics	Total Hours	Contact Hours	
			Theoretical Hours	Practical Hours *
1	Introduction to computer architecture, CISC and RISC ]	[2.5 ]	[2.5 ]	
2	Introduction to computer architecture, CISC and RISC ]	[4 ]	[2.5 ]	[1.5 ]
3	Computer Instructions: Assembly Language ]	[4 ]	[2.5 ]	[1.5 ]
4	Computer Instructions: Assembly Language ]	[4 ]	[2.5 ]	[1.5 ]
5	Assessing Performance ]	[4 ]	[2.5 ]	[1.5 ]
6	Processor Structure and Management ]	[4 ]	[2.5 ]	[1.5 ]
7	<b>Midterm Exam</b>			
8	Processor Structure and Management ]	[4 ]	[2.5 ]	[1.5 ]
9	Memory Structure and Design ]	[4 ]	[2.5 ]	[1.5 ]
10	Memory Structure and Design ]	[4 ]	[2.5 ]	[1.5 ]
11	Storage, Network and Peripherals ]	[4 ]	[2.5 ]	[1.5 ]
12	Storage, Network and Peripherals ]	[4 ]	[2.5 ]	[1.5 ]
13	Storage, Network and Peripherals ]	[4 ]	[2.5 ]	[1.5 ]
14	Multiprocessors and clustering ]	[4 ]	[2.5 ]	[1.5 ]
15	<b>Final Exam</b>			
<b>Total Teaching Hours</b>		<b>51</b>	<b>33</b>	<b>18</b>

\* No Practical/Tutorial during the first week of the semester

VI. Teaching and Learning Methods

Teaching/Learning Method	Selected Method	Course ILOs Covered by Method (By ILO Code)			
		K & U	Intellectual Skills	Professional Skills	General Skills
Lectures & Seminars	[✓]	[All]	[I1,I2]	[P1,P2,P3]	[All]
Tutorials	[ ]	[ ]	[ ]	[ ]	[ ]
Computer lab Sessions	[✓]	[ ]	[ ]	[ ]	[ ]
Practical lab Work	[✓]	[K3]	[ ]	[All]	[ ]
Reading Materials	[✓]	[All]	[ ]	[ ]	[ ]
Web-site Searches	[ ]	[ ]	[ ]	[ ]	[ ]
Research & Reporting	[ ]	[ ]	[ ]	[ ]	[ ]
Problem Solving / Problem-based Learning	[✓]	[ ]	[ ]	[P4]	[ ]
Projects	[ ]	[ ]	[ ]	[ ]	[ ]
Independent Work	[ ]	[ ]	[ ]	[ ]	[ ]
Group Work	[ ]	[ ]	[ ]	[ ]	[ ]
Case Studies	[ ]	[ ]	[ ]	[ ]	[ ]
Presentations	[ ]	[ ]	[ ]	[ ]	[ ]
Simulation Analysis	[ ]	[ ]	[ ]	[ ]	[ ]
Others (Specify):	[ ]	[ ]	[ ]	[ ]	[ ]



Course Specification

VII. Assessment Methods, Schedule and Grade Distribution

Assessment Method	Selected Method	Course ILOs Covered by Method (By ILO Code)				Assessment Weight / Percentage	Week No.
		K & U	I.S.	P.S.	G.S.		
Midterm Exam	<input checked="" type="checkbox"/>	All	All	All	All	20%	7
Final Exam	<input checked="" type="checkbox"/>	All	All	All	All	60%	15
Quizzes	<input checked="" type="checkbox"/>	All	All	All	All	10%	
Course Work	<input type="checkbox"/>						
Report Writing	<input type="checkbox"/>						
Case Study Analysis	<input type="checkbox"/>						
Oral Presentations	<input type="checkbox"/>						
Practical	<input checked="" type="checkbox"/>	[K3]		[All]	[G3]	[10%]	[Every week]
Group Project	<input type="checkbox"/>						
Individual Project	<input type="checkbox"/>						
Others (Specify):	<input type="checkbox"/>						

VIII. List of References

<b>Essential Text Books</b>	<ul style="list-style-type: none"> <li>[Computer architecture and Design (D. Patterson and J. Hennessy)]</li> </ul>
<b>Course notes</b>	<ul style="list-style-type: none"> <li>[Lecture Slides and Notes]</li> </ul>
<b>Recommended books</b>	<ul style="list-style-type: none"> <li>[Optional, For firmware design and testing parts] Arnold S.Berger, Embedded Systems Design: An Introduction to Processes, Tools and Techniques (Paperback), CMP Books; 1st edition (December 15, 2001)]</li> </ul>
<b>Periodicals, Web sites, etc ...</b>	<ul style="list-style-type: none"> <li>[Various]</li> </ul>

IX. Facilities required for teaching and learning

<p>List the facilities required</p> <ul style="list-style-type: none"> <li>• Data Show</li> <li>• White Bored</li> <li>• Simulation Software</li> <li>• Computer lab</li> </ul>
---

Course coordinator:[Dr. Nivin Abo El Hadid]

Head of Department:[Prof. Reda Abdelwahab]

Date:[September 2014]