CPIT-210 Syllabus

Catalog Description

CPIT-210 Computer Architecture
Credit: 3 (Theory: 3, Lab: 0, Practical: 1)
Prerequisite: CPCS-202
Classification: Department Required

The objective of this course is to provide an introduction to basic computer organization. Topics include binary, hexadecimal, and decimal number conversions, binary number arithmetic, laws of Boolean algebra, basic computer logic, gates, combinational circuits, sequential circuits, adders, counters, registers, decoder, encoder, comparator, multiplexer, computer organization buses and computer architecture, cache memory, computer arithmetic, instruction sets, and addressing modes.

Class Schedule

Lab/Tutorial 90 minutes 1 times/week

Meet 50 minutes 3 times/week or 80 minutes 2 times/week

Textbook

William Stallings, "Computer Organization and Architecture" 8 edition (2009)

ISBN-13 9780135064177 **ISBN-10** 0135064171

Grade Distribution

Week	Assessment	Grade %
2	Graded Lab Work 1	1
3	Graded Lab Work 2	1
4	Graded Lab Work 3	1
5	Quiz 1	2
7	Exam 1	15
8	Quiz 2	2
8	Graded Lab Work 4	1
9	Graded Lab Work 5	1
10	Exam 2	20
10	Graded Lab Work 6	1
12	Graded Lab Work 7	2
12	Quiz 3	1
13	Graded Lab Work 8	2
14	Lab Exam	10
14	Group Project	10
16	Exam	30

Last Articulated

December 18, 2017

Relationship to Student Outcomes

a	b	c	d	e	f	g	h	i	j	k	l	m	n
x	x	x						x					

Course Learning Outcomes (CLO)

By completion of the course the students should be able to

1. **Design and Derive logic expressions for different hardware devices (a)**
2. Analyze physical systems to convert into hardware design (b)
3. Implement hardware systems using simulators (i)
4. Convert the micro operations of instructions into hardware design (c)
5. Define the relations between hardware and operating systems (a)
6. **Identify the interaction between the CPU and the different computer units and I/O devices (a)**
7. **Discover the need for caching and the different caching techniques (a)**
8. **Write programming in hypothetical/Intel assembly language (i)**
9. Recognize the hardware needed to support different types of instructions (a)
10. **Apply the different addressing modes in assembly programming (i)**
11. Integrate basic components learned for hardware solutions of the problems (i)
12. Write assembly language programming (i)
13. Recognize the hardware support for time sharing system and modular design (i)

Coordinator(s)

Dr. Muhammad Khamis, Assistant Professor

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Topics Coverage Durations

Topics	Weeks
Analog and digital systems	1
Number systems and logic gates	1
boolean algebra and Logic Circuits and simplification	1
Arithmetic circuits and comprators	1
Decoder, Encoder, Multiplexer	1
Flip/Flops and Counters	1
Registers, Shift Registers and review previous topics	1
Computer Prototype	1
Buses and Computer Architecture	1
Cache memory	3
Instruction Sets: Characteristics and Functions	1
Instruction Sets: Addressing Modes and Format	1
Review	1