The University of Jordan

Faculty of Engineering and Technology

Computer Engineering Department

Fall Term 2014/2015

Course	Computer Organization – 0907335 (3 Cr. – Core Course)
Catalog Description	Introduction to computer organization. Computer instruction set. Machine language. Data processing. Arithmetic unit: Carry look-ahead adders, subtractors, and shifters. Logic unit. Combinational and sequential multipliers and dividers. Floating-point number representation and arithmetic. Data path design. Control unit design. Microprogramming. Pipelining.
Prerequisites by Course	Digital Logic (0907231)
Prerequisites by Topic	Students are assumed to have had sufficient knowledge pertaining to digital computers and their internal and external components, the design and analysis of digital logic circuits; combinational and sequential.
Textbook	Patterson and Hennessy. Computer Organization & Design: The Hardware/Software Interface, 5th ed., Morgan Kaufmann, 2014.
References	1. Hennessy and Patterson, Computer Architecture: A Quantitative Approach, 5th ed., Morgan Kaufmann, 2011. 2. J. Hayes. Computer Architecture and Organization, 3rd ed., McGraw-Hill, 1998. 3. M. Mano. Computer System Architecture, 3rd ed., Prentice Hall, 1993.
Course Website	http://www.abandah.com/gheith/?page_id=1040
Facebook group	https://www.facebook.com/groups/634888953293248/
Schedule & Duration	15 Weeks, 45 lectures, 50 minutes each (including exams)
Student Material	Text book, class handouts, some instructor keynotes, and access to a personal computer and the internet.
College Facilities	Classroom with whiteboard and projection display facilities, library, and computer laboratory.
Course Objectives	This course introduces the students to the basic concepts of computer organization at a number of different levels; this includes: 1. Understanding how data is represented and manipulated inside computers. 2. Basic organization of instruction sets, language translation, and program execution. 3. Analyzing and designing the basic datapath and control units of the processor. 4. Assessing and evaluating processor performance and its factors. 5. Identifying and understanding the difference and operation of single-cycle, multi-cycle, and pipelined processors.

Course Outcomes and Relation to ABET Program Outcomes

Upon successful completion of this course, a student should be able to:

1. Understand simple machine architecture and the reduced instruction set computers [a].
2. Understands basic data flow through the CPU (interfacing, bus control logic, and internal communications) [a].
3. Be able to write simple assembly language programs [a].
4. Analyze and design simple processor datapath [a, c].

Course Topics

1. Computer Abstractions and Technology (Sections 1.1–1.4 and 1.6)
2. MIPS Instruction set (Sections 2.1–2.12)
3. Computer Arithmetic (Appendix B.5 and Sections 3.1–3.5)
4. The Processor Control and Datapath (Sections 4.1–4.6 and Appendix D)

Computer Usage

Practical aspects of the course are covered in Computer Design Lab 0907439.

Important Dates

Date	Event
Sun 14 Sep, 2014	Classes Begin
Tue 14 Oct, 2014	Quiz 1
Oct 28 – Nov 18, 2014	Midterm Exam Period
Tue 2 Dec, 2014	Quiz 2
Tue 23 Dec, 2014	Last Lecture
Dec 30, 2014 – Jan 8, 2015	Final Exam Period

Policies

- Attendance is required. Class attendance will be taken every class and the university's polices will be enforced in this regard.
- All submitted work must be yours
- Cheating will not be tolerated
- Open-book exams
- Join the facebook group of this course
- Check department announcements at: http://www.facebook.com/pages/Computer-Engineering-Department/369639656466107 for general department announcements.

Assessments

Quizzes and Exams

Grading policy

Two Quizzes	20%
Midterm Exam	30%
Final Exam	50%

Instructors

Dr. Gheith Abandah, abandah@ju.edu.jo
Homepage: http://www.abandah.com/gheith
Office Hours: Sun – Wed: 11:00–12:00

Class Time and Location

Section 1: Sun, Tue, Thu: 9:00–9:50, CPE 001

Last Updated: Sep 10, 2014

Program Outcomes (PO)

a	An ability to apply knowledge of mathematics, science, and engineering
b	An ability to design and conduct experiment as well as to analyze and interpret data.
c	An ability to design a system, component, or process to meet desired needs , within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
d	An ability to function on multidisciplinary teams
e	An ability to identify, formulate, and solve engineering problems
f	An understanding of professional and ethical responsibility.
g	An ability to communicate effectively
h	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
i	A recognition of the need for, and an ability to engage in life-long learning
j	Knowledge of contemporary issues
k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice