

**University of Jordan**  
**Computer Engineering Department**  
**Course Outline**  
**Computer Design (0907432)**

**I. Course Description**

Exploiting instruction level parallelism, hardware and software approaches. Pipelined, Vector, Super scalar, and VLIW processors. Predication, Branch Prediction, and Control and Data Speculation. Case Studies of Modern Processors. Hierarchical Memory Design. Virtual memory. Input/Output Interfacing and System Integration. Introduction to Parallel Processing. Flynn's classification. Symmetric Multiprocessors. Cache coherence. Tutorial one hour weekly.

**Prerequisite:** Computer Organization (0907335)

**II. Textbooks and References**

1. Patterson and Hennessy. Computer Organization & Design: The Hardware/Software Interface, 4th ed., Morgan Kaufmann, 2009. *Main Textbook*.
2. Hennessy and Patterson, Computer Architecture: A Quantitative Approach, 4th ed., Morgan Kaufmann, 2007.
3. D. Culler and J.P. Singh with A. Gupta. Parallel Computer Architecture: A Hardware/Software Approach, Morgan Kaufmann, 1998.
4. J. Hayes. Computer Architecture and Organization, 3rd ed., McGraw-Hill, 1998.

**III. Evaluation of Outcomes**

- |    |                              |     |
|----|------------------------------|-----|
| 1. | Four Quizzes                 | 20% |
|    | a. <i>Quiz 1 (19/2-20/2)</i> |     |
|    | b. <i>Quiz 2 (4/3-5/3)</i>   |     |
|    | c. <i>Quiz 3 (15/4-16/4)</i> |     |
|    | d. <i>Quiz 4 (6/5-7/5)</i>   |     |
| 2. | Midterm Exam (18/3-5/4)      | 30% |
| 3. | Final Exam (22/5-29/5)       | 50% |

**IV. Class Policies**

- Attendance is required
- All submitted work must be yours
- Cheating will not be tolerated

**V. Course Outline**

Topic	Textbook Sections
Introduction	
Measuring and Summarizing Performance	1.4-1.10
Advanced Instruction-Level Parallelism	4.10-4.15
Memory Hierarchy	5.1-5.13
<i>Midterm Exam</i>	
Storage and I/O	6.1-6.14
Multicores, Multiprocessors, and Clusters	7.1-7.14

**VI. Sections and Instructors**

Sec	Meeting Time	Room	Instructor	Office Hours	E-mail, Homepage
1	Mon, Wed 8:00-9:30	CPE 001	Dr. Gheith Abandah	Sun 12-1 Tue 9-10 Wed 10-11	<a href="mailto:abandah@ju.edu.jo">abandah@ju.edu.jo</a> , <a href="http://www.abandah.com/gheith">http://www.abandah.com/gheith</a>
2	Sun, Tue, Thu 8:00-9:00	CPE 001			