

**KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS**  
**COLLEGE OF COMPUTER SCIENCES & ENGINEERING**  
**COMPUTER ENGINEERING DEPARTMENT**

**COE 308 Computer Architecture (3-0-3) - T982**

**SYLLABUS**

**Instructor:**

Dr. Aiman El-Maleh (room 22/332, phone: 2811, e.mail: aimane@ccse.kfupm.edu.sa)

**Catalog Description:**

Memory management and cache memory. Integer and floating-point arithmetic. Instruction and arithmetic pipelining, superscalar architecture. Reduced Instruction Set Computers. Parallel architectures and interconnection networks.

**Prerequisite:**

COE 205

**Text Book:**

Barry Wilkinson, “*Computer Architecture, Design and Performance*”,  
Prentice Hall, Second Edition, 1996.

**Goal:**

- (1) To understand the basics of memory management.
- (2) To learn the principles of integer and floating-point arithmetic.
- (3) To study the design of pipelined processors.
- (4) To comprehend the basic parallel architectures and interconnection networks.

**Topics:**

- (1) **Computer Systems (2 hr.):** Basic concepts, Architectural developments, Performance measures (Chapter 1).
- (2) **Computer Arithmetic (5 hr.):** Integer and floating point arithmetic (Handouts).
- (3) **Memory-System Design (9 hr.):** General principles, Cache memory, Virtual memory, Memory management, Performance issues (Chapters 3 & 4).
- (4) **Pipeline Design Techniques (7 hr.):** Basic concepts, Instruction pipelines, Arithmetic pipelines, Pipelines hazards, Superscalar processors, Performance issues (Chapter 5).
- (5) **Multiprocessor Systems (9 hr.):** General concepts, Arrays computers, General purpose MIMD systems, Programming and performance issues (Chapter 6).
- (6) **Interconnection Networks (9 hr.):** General concepts, Dynamic networks, Static networks, Performance issues(Chapters 7 & 8).

**(7) Problem solving and Tests (4 hr.)**

**Lectures:**

S. M. W. 1:10 - 2:00

Room: 24 / 283

**Office Hours:**

S. M. W. 10:30 - 11:30 & 2:30 - 3:30

Room: 22 / 332

**Grading Policy:**

- Homeworks 10%
- Quizzes 20%
- Major Exam I 20% (tentative date: March 13 1999)
- Major Exam II 20% (tentative date: April 24 1999)
- Final Exam 30% (scheduled by the registrar)

**Attendance Policy:**

- Attendance will be taken regularly.
- A **0.5%** will be deducted from the **final grade** for each unexcused absence.
- Excuses for officially authorized absences must be presented no later than one week following resumption of class attendance.