KING FAHD UNIVERSITY OF PETROLEUM & MINERALS
COLLEGE OF COMPUTER SCIENCES & ENGINEERING

COMPUTER ENGINEERING DEPARTMENT

COE 205 Computer Organization & Assembly Language
Syllabus - Term 991

Catalog Description

Introduction to computer organization. Octal and Hexadecimal number systems, ASCII codes. Assembly language programming, instruction format and types, memory and I/O instructions, arithmetic instructions, addressing modes, stack operations, and interrupts. ALU and control unit design. RTL, microprogramming, and hardwired control. Practice of assembly language programming.
Prerequisite: COE 200

Instructor Dr. Aiman H. El-Maleh. Room: 22/332 Phone: 2811 Email: aimane

Office Hours Sat Wed 1:30 - 3:00 Sat Mon Wed 10:00 - 11:00

Text Book: *Assembly Language Programming and Computer Architecture*, Joe Carthy, Thomson Computer Press, 1996.

Course Policies

- Grades:

Laboratory	25%	
Homework	10%	
Quizzes	10%	
Exam I	15%	(tentative date: October 13)
Exam II	15%	(tentative date: November 17)
Final	25%	(Comprehensive Exam)

- Late assignments will NOT be accepted.

Course Topics

1. ***Introduction and Information Representation.*** (Appendix B, Notes) **4 lectures**
   Introduction. Octal and Hexadecimal number system. ASCII code. Computer components.
2. ***Assembly Language Concepts.*** (2.1, 2.3, 2.5, 2.6, 3.3) **5 lectures**
   Assembly language format. Directives vs. instructions. Constants and variables. I/O. INT 21H. Addressing modes.
3. ***8086 Assembly Language Prog.*** (3.1, 3.2, 3.4, 3.5, 4.1, 4.3, 4.4, Notes) **14 lectures**
   Register set. Memory segmentation. MOV instructions. Arithmetic instructions and flags (ADD, ADC, SUB, SBB, INC, DEC, MUL, IMUL, DIV, IDIV). Compare, Jump and loop (CMP, JMP, Cond. jumps, LOOP). Logic, shift and rotate . Stack operations. Subprograms. I/O (IN, OUT). String instructions (MOVSB).
4. ***Computer Organization.*** (5.1, Notes) **6 lectures**
   Main memory, SRAM, DRAM. External memory, magnetic and optical disks. Bus system. I/O devices. Interrupts and interrupt processing, INT and IRET.

5. ***Control Unit Design.*** (Handout) **12 lectures**
   1-bus, 2-bus and 3-bus CPU organization. Fetch and execute phases of instruction processing. Machine code. Control steps. Hardwired control. Microprogramming.