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

COMPUTER ENGINEERING DEPARTMENT

COE 205 Computer Organization & Assembly Language
Syllabus - Term 003

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 and ICS 201

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

Office Hours Sat-Sun-Mon-Tues, 2:00-3:00 PM

Text Book: *Assembly Language Programming and Organization of the IBM PC*, Ytha Yu and Charles Marut, McGraw Hill, 1992. (ISBN: 0-07-072692-2)

Grading Policy

Laboratory	25%
Quizzes	10%
Exam I	20%
Exam II	20%
Final	25%

Course Topics

1. ***Introduction and Information Representation.*** **4 lectures**
   Introduction. Octal and Hexadecimal number system. ASCII code. Computer components.
2. ***Assembly Language Concepts.*** **5 lectures**
   Assembly language format. Directives vs. instructions. Constants and variables. I/O. INT 21H. Addressing modes.
3. ***8086 Assembly Language Programming.*** **12 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.
4. ***Computer Organization.*** **5 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.*** **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.