KFUPM* : EE 390**-Digital System Engineering : ***Term 071

Instructor: Dr. Sheikh Sharif Iqbal Subject : EE 390-1&4 Location: 59-2024

Office : **Room: 59 – 1075**. **Tel. 2818** Email : sheikhsi@kfupm.edu.sa

Office Hour: ***SMW- 11:10-11:40*** AND ***UT- 10:10-10:50*** OR by appointment

TOPICS	Week	DATE	Laboratory	Assignments
Ch 1: Overview of µC/µP systems; 8086/8088 µP internal architechture, Ch 2: Software model; memory addreses;	1	Sept. 8 -12	*No Lab.*	***Ch1 Problems**: 1 - 16, 18, 24, 28, 32, 33, 37, 40, 42, 43, 47, 48, 49*
Data types, Memory segments; Internal registers and Flags; Memory address and Stack (briefly);	2	Sept. 15 - 19	*Experiment **0**: PC Hardware...*	***Ch2 Problems**: 2.1–2.3, 2.8 - 2.10, 2.11 - 2.19, 2.23 - 2.27, 2.34, 2.37, 2.41, 2.46, 2.48, 2.53 - 2.60, 2.64, 2.65*
Ch 4.1-4.3: Machine code, Brief discussion on DEBUG commands ***Ch 3:*****Addressing modes and MOV ins.**	3	Sept. 22 - 26	*No Lab.*	***Ch4 Problems**: 4.7 – 4.17, 4.27* ***Ch3 Problems**: 3.3 – 3.11*
Ch 7: Introduction to Directives (DB, DW…..) ; EDIT, TASM, TLINK programs Ch 5: Data transfer instructions; INT 21;	4	Sept. 29 – Oct.3	***1.** Introduction to Debug & Turbo..*	***Ch7 Problems**: 7.2 – 7.6 , 7.10 – 7.16 ,* ***Ch5 Problems**: 5.1 – 5.5*
Id al-Fitr Vacation October 4th- 19th				
Ch 5: Arithmetic instructions; Ch 5: Logical instructions; - - - - - - -	5	Oct. 20- 24	*No Lab.*	***Ch5 Problem**: 5.6– 5.9, 5.10 – 5.17, 5.20– 5.25, 5.26 – 5.35, 5.39, 5.47*
Ch 5: Shift and Rotate instructions; Ch 6: Flag control, Compare instruction; Ch 6: Jump Instructions;	6	Oct. 27- 31	***2.** Addressing modes and data*	***Ch5 Problems**: 5.39, 5.43, 5.47, 5.49* ***Ch6 Problem**: 6. – 6.5, 6.8, 6.15, 6.21, 6.22*
Ch 6: Stack instructions and Subroutines; Ch 6: Loop and Strings instructions; BIOS & DOS Intrrupts (INT-10, INT-21)	7	Nov. 3-7 **Exam 1: Nov 4, Sun, 5:15-7:00 PM**	***3**. Arithmetic instructions ...*	***Ch6 Problem**: 6.25, 6.29, 6.31, 6.39, 6.43, 6.45, 6.48*
Useful Assambly language programs Ch 8.1-8.3: Memory Interface; Minimum mode of memory control;	8	Nov. 10-14	***4**. Shift and rotate …..*	**** Ass. Lang. Programs*** ***Ch8 Problems**: 8.7, 8.11, 8.16, 8.19,*
Ch 8.4: Maximum mode of memory control **Ch 8.5-8.7:**System clock, Bus cycle …..; **Ch 8.8:** Hardware organisation of memory;	9	Nov. 17-21	***5**. Using BIOS Services (Part 1)*	***Ch8 Problems**: 8.23, 8.31, 8.37, 8.40, 8.43, 8.49*
Ch 8.14-8:17: I/O Data Tranfer & Instruc, Ch 10.1-10:4: Isolated Bytewide I/O Ports; Input/Output handshaking …..	10	Nov. 24-28	***6**. Using BIOS Services (Part II)*	***Ch8 Problems**: 8.84 – 8.87, 8.89, 8.91, 8.93, 8.96, 8.99, 8.100, 8.101, 8.103, 8.105*
Ch 10.5- 10.6: The 82C55A (PPI) I/O interface chip; 8255A parallel I/O ports;	11	Dec. 1-5	***7**. Introduction to Flight86...*	***Ch10 Problems**: 10.3, 10.5, 10.8 – 10.10, 10.12 10.14, 10.17, 10.23, 10.25, 10.26*
Ch 10.7: Memory mapped I/O Interface; Ch 8.9-8:12: Memory Read/Write Bus ; Memory Circuits..,Ch 8.18: I/O read/write	12	Dec. 8-12	***8**. Flight86 - I: Traffic Lights*	***Ch10 Problems**: 10.32 – 10.35, 10.37* ***Ch8 Problems**: 8.57, 8.63, 8.64, 8.108*
Id al-Adha Vacation Dec. 13th- 28th				
Ch 9.1- 9:3: ROM,PROM,EPROM (prog. storage)RAM,SRAM,DRAM (data storage); **Ch 9.5:** Introduction to Flash	13	Dec. 29- Jan. 2	***9**. Flight86 - II: Motor Control*	***Ch9 Problems**: 9.2, 9.6 9.8, 9.11, 9.14, 9.16, 9.17, 9.21, 9.28, 9.29*
Introduction to the 8051 Microcontroller, Basic Microcontroller Programming	14	Jan. 5- 9 **Exam 2: Jan. 6, Sun, 5:15-7:00 PM**	***10.** Introduction to the 8051 Microcontroller*	
Review	**15**	Jan. 12- 16	*LAB FINAL*	

Textbook : 'The 8088 and 8086 Microprocessors' by Triebel and Singh latest edition.

Grading: CW/Project/HW **20% ;** Major-1 **15% ;** Major-2 **15% ;** Final-exam **30% ;** Lab **20%**

Major Exams: **Exam 1; Sunday; 4nd Nov. ; 17:15 - 20:00 PM ; Room: 6 - 125**

Exam 2; Sunday; 6th Jan. ; 17:15 - 20:00 PM ; Room: 6 - 125

Absences: University rules: -- 4 unexcused absences ➔ **Warning ;** -- 6 unexcused absences ➔ **DN**.