M.Tech. ESS (1st Semester)
COURSE TITLE: EMBEDDED SYSTEM DESIGN LAB
COURSE CODE: ESS-107L
2018-2019

S. No.	EXPERIMENT	DEMONSTRATOR
1	Program to perform 1's complement of data contained in some register (say FSR)	***Dr. Javeed Iqbal Reshi***
2	Program to perform 2's complement of data contained in some register (say FSR)	
3	Addition of two 8- bit numbers [first number is stored in working register (W) & second number is placed in some M/M location]	
4	Addition of two 8-bit numbers[first number is in working register and second number in some M/M location (say 20H) which is addressed by an address pointer (FSR) & whose content is in INDF register]	
5	Addition of two 8- bit numbers [first number is stored in working register (W) & second number is placed in some register (FSR)]	
6	Addition of 8-bit numbers stored at five M/M locations & storing the result in some M/M location	
7	Addition of 8-bit numbers stored in five M/M locations using the concept of loop.	
8	Addition of two 8-bit numbers stored in two M/M locations using call to a subroutine.	
9	Subtraction of two 8- bit numbers [first number is stored in working register (W) and second number is placed in some register (FSR)]	
10	Subtraction of two 8-bit numbers [first number is in working register and second number in some M/M location (say 20H) which is addressed by an address pointer (FSR) and whose contents is in 'INDF' register]	
11	Subtraction of two 8- bit numbers [first number is stored in working register (W) and second number is placed in some M/M location]	
12	Subtraction of 8-bit numbers stored at five M/M locations and storing the result in some M/M location.	
13	subtraction of 8-bit numbers stored in M/M locations using concept of loop	***Dr. M. Tariq Banday***
14	Performing a logical 'AND' operation on two 8-bit numbers.	
15	Performing 'OR' operation on two 8-bit numbers.	
16	Performing 'XOR' operation on two 8-bit numbers.	
17	Check whether the number is odd or even.	
18	Check whether the number is positive or negative.	
19	Counting the number of even & odd numbers stored in six different M/M locations.	
20	Addition of two 16-bit numbers (using direct addressing)	
21	Addition of two 16-bit numbers (using indirect addressing)	
22	Subtraction of two 16-bit numbers (using direct addressing)	
23	Subtraction of two 16-bit numbers (using indirect addressing).	
24	Multiplication of two 8 bit numbers in C.	
25	Turn ON LED wired to Port B, Line 0	***Dr. Javeed Iqbal Reshi***
26	Some basic practicals on Proteus	
27	Turn ON and OFF LED wired to Port B, Line 0	
28	Turn ON and OFF LED wired to Port B, Line 0 and 1	
29	Circuit with LED wired to RB0 and pushbutton switch, active low, wired to RA0. Push button action turns LED OFF when pressed & ON when released.	
30	Circuit with eight LEDs wired to RB0 to RB7. Program displays a binary count from 0 to 255 on LEDs.	
31	Circuit with eight LEDs wired to RB0 to RB7. Program displays a binary count from 0 to 255 ON LEDs.	
32	Program displays a count from 0 to 9 on 7-segment display.	
33	Program displays a count from 0 to 99 on two 7-segment displays.	
34	Circuit interfacing 7-segment display & matrix keypad. Program displays a key pressed	***Dr. M. Tariq Banday***
35	Program to test an interrupt on RB0. A pushbutton switch is connected to port RB0. The pushbutton toggles an LED on Port B, Line 2. Another LED on Port B, Line 1, flashes ON & OFF at half second intervals.	
36	Program to use the external interrupt on Port B RB0 to terminate the power down state caused by the sleep instruction. A pushbutton switch is connected to Port B RB0. The	

	pushbutton generates the interrupt that ends the sleep conditions.	
37	Program to use the external interrupt on Port B RB0 to terminate the power down state caused by the sleep instruction. A pushbutton switch is connected to Port B RB0. The pushbutton generates the interrupt that ends the sleep conditions.	
38	Program to test the Port B, bits 4 and 7, status change interrupt. Push button switches are connected to Port B Lines 4 and 7. A red led is wired to Port RA1 and a green led to port RA0. The push button generates interrupt that toggles the LEDs ON and OFF.	
39	Test program for the Timer0 counter. The program counts the number of presses of the pushbutton switch on port RA4/T0CKI & displays the count on a seven segment display. Switch is wired active low.	
40	Program to demonstrate programming of the 16F84A Timer0 module. Program flashes 8 LEDs in sequence counting from 0 to 0XFF. Timer0 is used to delay the count.	
41	C program to glow LED bar by sending some value to connected port	
42	C program to glow LED bar in endless loop	***Dr. Javeed Iqbal Reshi***
43	C program to blink LED number of times using for loop	
44	C program to blink LED number of times using if loop	
45	C program for starting a siren	
46	C program with assembler block to run counter timer	
47	C program for external interrupt test	
48	C programming for interfacing 16x2 LCD	
49	Program for parallel slave port (PSP) communication.	
50	Program for serial I/O using hardware RS232 port.	
51	Program for serial LCD test-send character using putc() and printf()	
52	Program for displaying float on serial LCD using RS232	
53	Program for displaying arrays on serial LCD using RS232	
54	Program for PIC to PIC communication using RS232.	***Dr. M. Tariq Banday***
55	Program for SPI communication	
56	Program for PIC to PIC communication using SPI and displaying the data on LCD	
57	Program for I/O using I2C link.	
58	Program for I/O using I2C link. One PIC sends data to other PIC on I2C link which displays it on LCD.	
59	Installation of virtual machine	
60	Learning the UNIX commands.	
61	Use of COOJA tool for demonstration of wireless sensor networks	
62	Simulation of an astable multivibrator (bionical vagalume)	
63	Simulation of a clock generator with integrated circuit 555	***Dr. Javeed Iqbal Reshi***
64	Simulation of a 10 LED sequencer	
65	Simulation of an adjustable power supply with IC LM317	
66	Simulation of a voltage amplifier (graphic analysis)	

M.Tech. ESS (1st Semester)
COURSE TITLE: ADVANCED DIGITAL SYSTEM DESIGN
COURSE CODE: ESS-108L – PART I

S.No.	EXPERIMENT	DEMONSTRATOR
1	MOSFET characteristics (O/P)	
2	Dc analysis of inverter	
3	Transient analysis of static NOT gate	
4	Transient analysis of static NAND gate	
5	Transient analysis of static AND gate	
6	Transient analysis of static NOR gate	
7	Transient analysis of static OR gate	
8	Transient analysis of static XNOR gate	
9	Transient analysis of static XOR gate	
10	Ratioed NOT gate	
11	Ratioed AND gate	***Dr. Farooq Ahmad Khanday***
12	Ratioed OR gate	

13	Ratioed NOR gate	
14	Ratioed NAND gate	
15	Ratioed XOR gate	
16	Ratioed XNOR gate	
17	Dynamic NOT gate	
18	Dynamic NAND gate	
19	Dynamic NOR gate	
20	Subcircuit of NAND gate	
21	NAND calling NAND subcircuit	***Dr. Faisal Bashir***
22	Subcircuit of OR gate	
23	AND subcircuit	
24	NOT subcircuit	
25	XOR subcircuit	
26	2x1 mux using static design	
27	2x1 mux using subcircuits of NOT, AND & OR gates	
28	2x1 mux using NAND subcircuit	
29	Subcircuit of 2x1 mux using subcircuits of AND,OR & NOT	
30	4x1 mux using 2x1 mux subcircuit	
31	NOT gate design using NAND subcircuit	
32	AND using NAND subcircuit	
33	OR using NAND subcircuit	
34	XOR using NAND subcircuit	
35	XNOR using NAND subcircuit	
36	Half adder using static design	
37	Half adder using NAND subcircuit	
38	Subcircuit of half-adder using subcircuits of AND & XOR gates	
39	Full adder using NAND subcircuit	
40	Full adder using subcircuits of Half-Adder & OR gate	
41	Full adder using subcircuits of XOR, AND & OR gates	
42	NOT using mux subcircuit	
43	AND using subcircuit of mux	
44	OR using mux subcircuit	
45	VHDL code to implement half-adder using data-flow modelling(using XILINX)	
46	VHDL code to implement latch using data-flow modelling (using XILINX)	
47	VHDL code to implement 2:1 mux using data-flow modelling (using XILINX)	

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COURSE TITLE: ADVANCED DIGITAL SYSTEM DESIGN
COURSE CODE: ESS-108L – PART II

S. No.	EXPERIMENT	DEMONSTRATOR
1	Study of free space propagation model using MATLAB	***Dr. Javaid A. Sheikh***
2	Study of Long distance path loss model using MATLAB	
3	Study of log normal shadowing model using MATLAB	
4	Study of Hata model using MATLAB	
5	Study of Okumura model using MATLAB	
6	Simulation of FSK modulation & demodulation over AWGN channel using MATLAB	
7	Simulation of error performance of BPSK modulator using MATLAB	
8	Simulation of error performance of QPSK modulator using MATLAB	
9	Simulation of error performance of 16-QAM modulator using MATLAB	
10	Comparison of error performance of BPSK,QPSK & 16-QAM modulation using MATLAB	