

PANIPAT INSTITUTE OF ENGINEERING & TECHNOLOGY

Department of Electronics & Communication Engineering

LESSON PLAN

Subject Name: - Microcontroller & Embedded System Design Subject Code: - ECE-401N

Year: - 4th

Semester: - 7th

Lecture No	Unit No	Topic	References
1	-	Introduction to subject	M.A. Mazidi, J.G. Mazidi, R. D. McKinlay," The 8051 Microcontroller and Embedded systems using assembly and C
2	1	Unit- I Microprocessor and Microcontroller, Different types of Microcontrollers, 4-bit, 8-bit, 16-bit, and 32-bit Microcontrollers	
3	1	Processor Architectures: Harvard & Princeton, CISC & RISC, Microcontrollers memory types,	
4	1	Microcontrollers features, Criteria for choosing a microcontroller, Applications of microcontrollers.	
5	1	Embedded System, Embedded Processors, Hardware units, Devices and Software in a system,	Raj Kamal, "Embedded systems architecture, programming and design
6	1	Embedded system on chip, Complex Systems design and processors, Design examples.	
7	2	Unit-II 8051 Architecture, On-chip memory organization – general purpose registers	M.A. Mazidi, J.G. Mazidi, R. D. McKinlay," The 8051 Microcontroller and Embedded systems using assembly and C
8	2	SFR registers, Internal RAM and ROM, Oscillator and Clock circuits.	
9	2	Pin Diagram of 8051, I/O Pins, Port	

10	2	Connecting external memory, Counters and Timers,	
11	2	Purpose of TCON & TMOD registers,	
12	2	Timer and Counter programming,	
13	2	Timer and Counter programming,	
14	2	Serial data transmission/reception and transmission modes,	
15	2	Purpose of SCON & PCON registers	
16	2	Serial port programming	
17	2	Serial port programming	
18	2	Different Types of Interrupts	
19	2	Interrupt programming	
20	2	Interrupt programming	
21	2	Purpose of Time Delays	
22	3	Unit- III 8051 Instruction syntax, Assembler directives	M.A. Mazidi, J.G. Mazidi, R. D. McKinlay,” The 8051 Microcontroller and Embedded systems using assembly and C
23	3	Addressing modes	
24	3	Data transfer instructions	
25	3	Arithmetic and Logical Instructions	
26	3	Jump and Call instructions	
27	3	I/O port Programming	
28	3	PIC MICROCONTROLLER ARCHITECTURE: Introduction to PIC Microcontroller families, Different features of PIC16 Microcontrollers,	
29	3	PIC16 Architecture and Pipelining,	
30	3	Pin Configuration of PIC16, Program memory considerations, Register file structure,	

31	3	Addressing modes, Instruction set.	
32	4	Unit-IV Interfacing of Matrix Keyboards	M.A. Mazidi, J.G. Mazidi, R. D. McKinlay,” The 8051 Microcontroller and Embedded systems using assembly and C
33	4	Interfacing of LCD	
34	4	Interfacing of ADC	
35	4	Interfacing of DAC	
36	4	Interfacing of Temperature sensor, Relay and PWM	
37	4	Interfacing of Stepper motor	
38	4	Interfacing of DC motor	
39	4	Introduction of AVR,ARM	

Text Books:

1. Kenneth Ayala,” The 8051 Microcontroller” 3rd ed. CENGAGE Learning.
2. **M.A. Mazidi, J.G. Mazidi, R. D. McKinlay,” The 8051 Microcontroller and Embedded systems using assembly and C” -2nd Ed, Pearson Education.**
3. **John. B. Peatman, “Design with PIC Microcontroller”, Pearson Education, 2003.**

References Books:

1. MykePredko, “Programming and Customizing the 8051 Microcontroller”, TMH.
2. Manish K Patel, Microcontroller based embedded system”, McGraw Hill Education.
3. Raj Kamal, “Embedded systems architecture, programming and design”-2ndnd. McGraw-Hill Companies.
4. Intel’s manual on “Embedded Microcontrollers”.
5. MykePredko, “Programming and customizing PIC microcontroller” Mc- Graw Hill.
6. M.A. Mazidi, R. D. McKinlay,Causey,” The PIC microcontroller and Embedded Systems using assembly and C for PIC18” -2nd Ed, Pearson.
7. M.A. Mazidi,Naimi” The AVR microcontroller and Embedded Systems using assembly and C” -2nd Ed, Pearson.