



B.P. PODDAR INSTITUTE OF MANAGEMENT AND TECHNOLOGY

Department of Electrical Engineering
Academic Year -2023-24(Even Semester)

LESSON PLAN

Program: Electrical Engineering

Credit: 3

Contact: 3L

Paper : MICROPROCESSOR & MICRO CONTROLLER

Paper Code: PC-EE-602

L.NO	Topics Covered	Books	Teaching Aids	Teaching Methodology
L1	The 8086 Microprocessor: Introduction to 8086 architecture, registers, and memory segmentation.	T1, R1	Green board	Lecturing with ppt
L2	Addressing modes: Immediate, Register, Direct, Indirect, Indexed, and Base-Indexed addressing.	T1, R1	Green board	Lecturing with ppt
L3	Instruction set: Data transfer, arithmetic, logical, and control instructions.	T1, R2	Green board	Lecturing
L4	Assembler directives and Assembly language programming basics.	T2, R2	Green board	Lecturing, Examples
L5	Modular Programming: Procedures, macros, and their implementation in assembly language.	T2, R2	Green board	Lecturing
L6	Linking and Relocation: Concepts and practical examples in Assembly programming.	T2, R2	Green board, PPT	Lecturing
L7	Stack operations: PUSH, POP, stack manipulation, and applications.	T2, R3	Green board	Lecturing
L8	Procedures and Macros: Defining and calling procedures, parameter passing, and using macros.	T2, R3	Green board	Lecturing, Hands-on Demo
L9	Interrupts and ISR: Types of interrupts, interrupt vector table, and programming interrupt service routines.	T3, R4	Green board, PPT	Lecturing, Examples
L10	Byte and String Manipulation: String instructions, string comparison, and operations.	T3, R4	Green board	Lecturing
L11	8086 System Bus Structure: Signal descriptions, memory interfacing, and system bus timing.	T4, R5	Green board, Cut model	Lecturing
L12	System design using 8086: I/O programming and introduction to multiprogramming.	T4, R5	Green board, PPT	Lecturing
L13	Multiprocessor Configurations: Coprocessor, closely coupled, and loosely coupled configurations.	T4, R5	Green board, PPT	Lecturing
L14	Advanced Processors: Introduction to 80286, 80386, and 80486 processors.	T4, R5	Green board	Lecturing
L15	I/O Interfacing: Memory and I/O interfacing techniques.	T5, R6	Green board	Lecturing
L16	Parallel Communication Interface: 8255 PPI, interfacing with 8086.	T5, R6	Green board	Lecturing, Demo
L17	Serial Communication Interface: 8251 USART, interfacing and programming.	T5, R6	Green board	Lecturing, Demo
L18	D/A and A/D Interface: Digital-to-analog and analog-to-digital conversion interfacing.	T5, R6	Green board	Lecturing, Examples

L19	Timers and Controllers: Timer programming and interfacing.	T5, R6	Green board	Lecturing
L20	Case Studies: Traffic light control, LED display, LCD display, keyboard interface.	T5, R6	Green board, PPT	Lecturing, Demo
L21	Microcontroller: Introduction to 8051 architecture, SFRs, and I/O ports.	T6, R7	Green board	Lecturing
L22	Instruction set and addressing modes: Assembly programming for 8051.	T6, R7	Green board	Lecturing, Hands-on Demo
L23	Timers and Serial Port Programming: Timer modes and UART communication.	T6, R7	Green board	Lecturing
L24	Interrupt Programming: Configuring and using interrupts in 8051.	T6, R7	Green board	Lecturing
L25	LCD and Keyboard Interfacing: Programming and interfacing applications.	T6, R7	Green board, PPT	Lecturing, Demo
L26	ADC, DAC, and Sensor Interfacing: Analog interfacing with 8051.	T6, R7	Green board	Lecturing
L27	External Memory Interface: Interfacing external RAM and ROM.	T6, R7	Green board, PPT	Lecturing
L28	Stepper Motor and Waveform Generation: Motor interfacing with 8051.	T6, R7	Green board, Demo	Lecturing, Demo
L29	Comparison of Microprocessor and Microcontroller: PIC, ARM, and their applications.	T6, R7	Green board, PPT	Lecturing

Text Books:

T1: The Intel Microprocessors: Barry B. Brey, Pearson.

T2: Microprocessor Architecture, Programming, and Applications with the 8085: Ramesh S. Gaonkar, Penram International.

T3: Microprocessors and Interfacing: Douglas V. Hall, Tata McGraw-Hill.

T4: The 8051 Microcontroller: Kenneth J. Ayala, Cengage Learning.

T5: Microcontrollers: Theory and Applications: Ajay V. Deshmukh, Tata McGraw-Hill.

T6: Embedded Systems: Raj Kamal, Tata McGraw-Hill.

Reference Books:

R1: Advanced Microprocessors and Peripherals: K. M. Bhurchandi, A. K. Ray.

R2: Microprocessor and Microcontroller: Dr. Sunil S. Jain.

R3: The 8051 Microcontroller and Embedded Systems: Muhammad Ali Mazidi.

R4: PIC Microcontrollers: Principles and Applications: Martin P. Bates.

R5: ARM System Developer's Guide: Andrew N. Sloss, Dominic Symes.

R6: Microcontroller Programming and Interfacing: Steven F. Barrett.

R7: PIC Microcontroller Projects in C: Dogan Ibrahim.

Web References:

W1: NPTEL Course on Microprocessors and Microcontrollers:

<https://nptel.ac.in/courses/108105102>

W2: YouTube Tutorial on 8086 Programming:

<https://www.youtube.com/watch?v=K1FkQox9RsA>

W3: TutorialsPoint - 8051 Microcontroller Programming:

<https://www.tutorialspoint.com/8051-microcontroller>

W4: GeeksforGeeks - Assembly Language Programming:

<https://www.geeksforgeeks.org/assembly-language-programming/>

W5: Microcontrollers Lab - 8051 Interfacing Projects:

<https://microcontrollerslab.com>

Course Faculty