

**Moradabad Institute of Technology, Moradabad**  
**Department of Electronics & Communication Engineering**  
**Lecture Plan (2019-2020)**

**Sub:** Microprocessor  
**Code:** REE-602  
**L T P**  
 3 1 0

**Sem.:** 4<sup>th</sup>  
**Sec.:** G  
**Branch:** EE

**Prerequisites:**

1. Knowledge of Logic Devices
2. Knowledge of Programming Basics
3. Knowledge of Motors and Sensors

**Content Beyond Syllabus:**

1. 8051 Microcontroller & its Programming
2. C Language Programming of Processors
3. Real Time Interfacing with Processors

**Course Objectives:**

1.	To illustrate the basic concepts of Microprocessors.
2.	To illustrate the architecture of 8085 and 8086 microprocessors.
3.	To introduce the programming and interfacing techniques of 8085 & 8086 microprocessors.
4.	To introduce various peripheral devices.
5.	To understand interfacing of peripheral devices with microprocessor.

**Course Outcomes:**

Course Outcome ( CO )		Bloom's Knowledge Level (KL)
<b>At the end of course , the student will be able to understand</b>		
CO 1	Apply a basic concept of digital fundamentals to Microprocessor based personal computer system.	K <sub>3</sub> , K <sub>4</sub>
CO 2	Analyze a detailed s/w & h/w structure of the Microprocessor.	K <sub>2</sub> , K <sub>4</sub>
CO 3	Illustrate how the different peripherals (8085/8086) are interfaced with Microprocessor.	K <sub>3</sub>
CO 4	Analyze the properties of Microprocessors(8085/8086)	K <sub>4</sub>
CO 5	Evaluate the data transfer information through serial & parallel ports.	K <sub>5</sub>

KL- Bloom's Knowledge Level (K1, K2, K3, K4, K5, K6)

K1 – Remember K2 – Understand K3 – Apply K4 – Analyze K5 – Evaluate K6 – Create

**Lecture Plan:**

S. N.	Topics	Lectures	COs	Coverage Date	Remarks
<b>UNIT - 1</b>					
<b>Introduction</b>					
1.	Introduction to Microprocessor and its Applications, Microprocessor Evolution Tree	01	CO1 & CO2		Qualitative Discussion
2.	Microprocessor Architecture (Harvard & Princeton), General Architecture of the Microprocessor and its Operations	01			Qualitative Discussion
3.	Component of Microprocessor System: Processor, Buses	01			Qualitative Discussion
4.	Memory	02			Qualitative Discussion

5.	Inputs-outputs (I/Os)	01			Qualitative Discussion
6.	Other Interfacing Devices	02			Qualitative Discussion
<b>UNIT – 2</b>					
<b>8-bit Microprocessor</b>					
7.	Intel 8085 microprocessor: Pin Diagram, Internal architecture: ALU, Registers, Timing and Control Unit	01	CO3 & CO4		Qualitative Discussion
8.	interrupt	01			Qualitative Discussion <b>(25%)</b>
9.	Instruction Set of 8085: Instruction format, Op-codes, Mnemonics, No. of bytes computation of the instruction	01			Qualitative Discussion
10.	Machine cycles and T-states, and Execution time computation of an instruction	01			Qualitative Discussion
11.	Classification of instruction with their Examples	02			Qualitative Discussion
12.	Writing of Assembly Language Programs	02			Qualitative Discussion
<b>UNIT – 3</b>					
<b>16-bit Microprocessor</b>					
13.	Architecture of Intel 8086: Pin Diagram, Bus Interface Unit, Execution Unit	01	CO3 & CO4		Qualitative Discussion
14.	Register Organization, Memory Addressing	01			Qualitative Discussion
15.	Memory Segmentation, Pipelining	01			Qualitative Discussion
16.	Min & Max Operating Modes	01			Qualitative Discussion <b>(50%)</b>
17.	8086 Instruction set: Format, Addressing Modes	01			Qualitative Discussion
18.	Instruction Set Groups: Data transfer, Arithmetic, Logic	01			Qualitative Discussion
19.	String, Branch Control Transfer and Processor control	01			Qualitative Discussion
20.	Interrupts: Hardware and software interrupts	01			Qualitative Discussion
<b>UNIT – 4</b>					
<b>Fundamental of Programming</b>					
21.	Program structure for Microprocessors	02	CO2 & CO4		Qualitative Discussion
22.	Flowcharts of series, parallel, and controls Structures	02			Qualitative Discussion
23.	Assembler Level Programming: Memory space allocation for monitor and user program	02			Qualitative Discussion <b>(75%)</b>
24.	Assembly language program using Debug or MASM Assembler	02			Qualitative Discussion
<b>UNIT – 5</b>					
<b>Peripheral Interfacing</b>					

25.	Programmed I/O, Memory Mapped I/O	01	CO3 & CO5		Qualitative Discussion
26.	Interrupt Driven I/O, DMA I/O interface	01			Qualitative Discussion
27.	Serial and Parallel Communications	01			Qualitative Discussion
28.	Peripheral Devices: DMA controller (Intel 8237)	01			Qualitative Discussion
29.	Programmable Peripheral Interface (Intel 8255)	01			Qualitative Discussion
30.	Programmable Timer/Counter (Intel 8253/8254)	02			Qualitative Discussion
31.	Programmable Interrupt Controller (Intel 8259)	01			Qualitative Discussion <b>(100%)</b>
<b>Total Lectures Required</b>		<b>40</b>			

**Text Books:**

1. Gaonkar, Ramesh S, "Microprocessor Architecture, programming and applications with the 8085" Penram International Publishing 5th Ed.
2. Avtar Singh & Walter A. Triebel "8088 & 8086 Microprocessor" Pearson Education.
3. Ray, A.K. & Burchandi, K.M., "Advanced Microprocessors and Peripherals: Architecture, Programaming and Interfacing" Tata Mc. Graw Hill.
4. AK Gautam, "Advanced Microprocessors", Khanna Publishers.

**Reference Books:**

5. Brey, Barry B. "INTEL Microprocessors" Prentice Hall (India).
6. Aditya P Mathur, "Introduction to Microprocessor" Tata McGraw Hill.
7. M. Rafiquzzaman, "Microprocessors- Theory & Applications", Pearson India.
8. B. Ram, "Advanced Microprocessor & Interfacing" Tata McGraw Hill.
9. Renu Singh & B.P. Singh, "Microprocessor and Interfacing and applications" New Age International.
10. Liu and Gibson G.A., "Microcomputer Systems: The 8086/8088 Family Architecture Programming & Design" Pearson India.

**Subject Teacher**

**Subject Coordinator**

**H.o.D**