

**IV Year – I SEMESTER****T P C**  
**0 3 2****MICROPROCESSORS AND  
MICROCONTROLLERS LAB****Learning Objectives:**

- To study programming based on 8086 microprocessor and 8051 microcontroller.
- To study 8056 microprocessor based ALP using arithmetic, logical and shift operations.
- To study modular and Dos/Bios programming using 8086 micro processor.
- To study to interface 8086 with I/O and other devices.
- To study parallel and serial communication using 8051 micro controller.

**Any 8 of the following experiments are to be conducted :****I. Microprocessor 8086 :**

Introduction to MASM/TASM.

1. Arithmetic operation – Multi byte addition and subtraction, multiplication and division – Signed and unsigned arithmetic operation, ASCII – Arithmetic operation.
2. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
3. By using string operation and Instruction prefix: Move block, Reverse string Sorting, Inserting, Deleting, Length of the string, String comparison.
4. Modular Program: Procedure, Near and Far implementation, Recursion.
5. Dos/BIOS programming: Reading keyboard (Buffered with and without echo) – Display characters, Strings.
6. Interfacing 8255–PPI
7. Programs using special instructions like swap, bit/byte, set/reset etc.
8. Programs based on short, page, absolute addressing.
9. Interfacing 8259 – Interrupt Controller.

10. Interfacing 8279 – Keyboard Display.
11. Stepper motor control using 8253/8255.

Any 2 of the following experiments are to be conducted:

### **Microcontroller 8051**

12. Reading and Writing on a parallel port.
13. Timer in different modes.
14. Serial communication implementation.
15. Understanding three memory areas of 00 – FF (Programs using above areas).  
Using external interrupts.

### **Learning Outcomes:**

- Will be able to write assembly language program using 8086 micro based on arithmetic, logical, and shift operations.
- Will be able to do modular and Dos/Bios programming using 8086 micro processor.
- Will be able to interface 8086 with I/O and other devices.
- Will be able to do parallel and serial communication using 8051 micro controllers.