2/4 B.Tech. SECOND SEMESTER
MICROPROCESSOR LAB

CS4L3 **Required** **Credits: 2**
Lecture: -- **Internal assessment: 25 marks**
Lab: 3 periods/week **Semester end examination: 50 marks**

Course context and Overview: This course teaches necessary skills for building embedded processor-based systems, including the completion of a large-scale engineering project. This lab course covers the basics of modern processor and system architectures, advanced use of tools such as assemblers, C compilers and debuggers in embedded systems, as well as the methods for peripherals interfacing and networking.

Prerequisite: Microprocessor Programming, Assembly language and concepts of Micro controller.

Objectives:

1. Familiarize the architecture of 8086 processor, assembling language programming and Interfacing with various modules.
2. The student can also understand of 8051 Microcontroller concepts, architecture, programming and application of Microcontrollers

Learning Outcomes:

1. Write assembly language programs for arithmetic, logic, string operations and DOS/BIOS interrupts.
2. Interface different peripherals with 8086 microprocessor.

J. Microprocessor 8086:

1. Introduction to MASM/TASM/Debugger

2. Arithmetic operation – Multi byte Addition and Subtraction, Multiplication and Division – Signed and unsigned Arithmetic operation, ASCII – arithmetic operation.

3. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.

4. String operation and Instruction prefix: Move Block, Reverse string, Inserting, Deleting, Length of the string, String comparison.

5. DOS/BIOS programming: Reading keyboard (Buffered with and without echo) – Display characters, Strings.

6. Implement various sorting algorithms

II. Interfacing:

1.8255-PPI:Write ALP to generate Square wave using PPI.

2. Stepper motor interface with 8086

3. 8279 – Keyboard Display: Write a small program to display a string of characters.

4. ADC/DAC Interface with 8086 µP.

5. 8251 – USART: Write a program in ALP to establish Communication between two processors.

6. Interface Relay & Buzzer with 8086 µP using 8-channel USB Port.

Equipment required for Laboratories:

1. 8086 µP Kits
2. Interfaces/peripheral subsystems
   I. 8279-KB/Display II. 8255 PPI
   III. 8251 USART IV. Stepper Motor
3. ADC Interface
4. DAC Interface