3/4 B.Tech - SIXTH SEMESTER

EC6L1 Microprocessor & Microcontrollers Lab Credits: 2

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

Course Objectives:

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

Learning Outcomes:

At the end of this course, the students will be students will be able to

- Apply knowledge of the microprocessor's internal registers and operations by use of a PC based microprocessor simulator.
- Write assemble assembly language programs, assemble into machine a cross assembler utility and download and run their program on the training boards.
- Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.
- Write assembly language programs and download the machine code that will provide solutions real-world control problems such as fluid level control, temperature control, and batch processes.

NOTE: Minimum of 10 experiments has to be performed and recorded by the candidate to attain eligibility for External Practical Examination.

List of Experiments:

1. Introduction to Debugger / MASM / TASM.
2. Arithmetic operation – Multi byte Addition and Subtraction, Multiplication and Division
3. Arithmetic operations for performing Signed and unsigned Arithmetic operation, ASCII – arithmetic operation.
4. Logic operations – Shift and rotate – Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
5. 8255 – PPI: Write ALP to generate sinusoidal wave using PPI.
6. 8251 – USART: Write a program in ALP to establish Communication between two processors.
7. 8254 Timer in different modes.
8. Using string operation and Instruction prefix: Move Block, Reverse string, Sorting
9. Using string operations to perform string Insertion, Deletion, Length of the string, String comparison.
10. DOS/BIOS programming: Reading keyboard Buffered with echo to Display characters, Strings.
11. DOS/BIOS programming: Reading keyboard Buffered without echo Strings.
12. 8259 – Interrupt Controller: Generate an interrupt using 8259.
13. 8279 – Keyboard Display: Write a small program to display a string of characters.
14. Reading and Writing on a parallel port.
15. ADC Interface / DAC Interface.