Course code	Course Name	L-T-P-Credits	Year of Introduction
CS332	MICROPROCESSOR LAB	0-0-3-1	2016

Pre-requisite: CS305 Microprocessors and Microcontrollers

Course Objectives

- To practice assembly language programming on 8086.
- To practice fundamentals of interfacing/programming various peripheral devices with microprocessor/microcontroller.

List of Exercises/ Experiments: (Minimum 12 Exercises/ Experiments are mandatory. Exercises/ Experiments marked with * are mandatory)

I. Assembly Language Programming Exercises/Experiments using 8086 Trainer kit

1. Implementation of simple decimal arithmetic and bit manipulation operations.*
2. Implementation of code conversion between BCD, Binary, Hexadecimal and ASCII.
3. Implementation of searching and sorting of 16-bit numbers.
4. Programming exercises using stack and subroutines.*

II. Exercises/Experiments using MASM (PC Required)

5. Study of Assembler and Debugging commands.
6. Implementation of decimal arithmetic(16 and 32 bit) operations.*
7. Implementation of String manipulations.*
8. Implementation of searching and sorting of 16-bit numbers.
9. Implementation of Matrix operations like addition, transpose, multiplication etc.

III. Interfacing Exercises/Experiments with 8086 trainer kit through Assembly Language Programming

10. Interfacing with stepper motor - Rotate through any given sequence.*
11. Interfacing with 8255 (mode0 and mode1 only).*
12. Interfacing with 8279 (Rolling message, 2 key lock out and N-key roll over implementation).*
13. Interfacing with 8253/54 Timer/Counter.
14. Interfacing with Digital-to-Analog Converter.*
15. Interfacing with Analog-to- Digital Converter.
16. Interfacing with 8259 Interrupt Controller.

IV. Exercises/Experiments using 8051 trainer kit

17. Familiarization of 8051 trainer kit by executing simple Assembly Language programs such as decimal arithmetic and bit manipulation.*
18. Implementation of Timer programming (in mode1).
19. Implementation of stepper motor interfacing, ADC/DAC interfacing and sensor interfacing with 8251 through Assembly Language programming.

Expected Outcome

The students will be able to

i. Develop assembly language programs for problem solving using software interrupts and various assembler directives.

ii. Implement interfacing of various I/O devices to the microprocessor/microcontroller through assembly language programming.