

Course Name: Microprocessor & Microcontroller Laboratory

Course Code: EE594C

Credit: 2

Course Objective:

- To expose students to the operation of typical microprocessor (8085) trainer kit.
- To prepare the students to be able to solve different problems by developing different programs.
- To develop the quality of assessing and analyzing the obtained data.

Course Outcomes:

At the end of the course, a student will be able to:

1. **Identify** relevant information to supplement to the Microprocessor and Microcontroller course.
2. **Set up** programming strategies and select proper mnemonics and run their program on the training boards.
3. **Practice different** types of programming keeping in mind technical issues and evaluate possible causes of discrepancy in practical experimental observations in comparison.
4. **Develop** testing and experimental procedures on Microprocessor and Microcontroller analyze their operation under different cases.
5. **Prepare** professional quality textual and computational results, incorporating accepted data analysis and synthesis methods, simulation software, and word-processing tools.
6. Primarily via team-based laboratory activities, students will **demonstrate** the ability to interact effectively on a social and interpersonal level with fellow students, and will demonstrate the ability to divide up and share task responsibilities to complete assignments.

CO- PO mapping:

CO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
1	2	3	2	2	-	1	-	-	2	2	2	2
2	3	3	1	2	2	1	1	1	2	2	2	2
3	1	2	3	2	-	3	-	2	2	3	1	-

4	2	3	-	2	2	1	-	1	2	2	-	2
5	1	2	1	2	3	-	2	-	2	2	1	2
6	-	-	1	-	-	2	-	2	3	3	1	1

Syllabus:

Experiments	Relevant COs
<p>1. Familiarization with 8085 register level architecture and trainer kit components including the memory map. Familiarization with process of storing and viewing the contents of memory as well as registers.</p> <p>2. (a) Study of prewritten program on trainer kit using the basic instruction set (data transfer, load/store, arithmetic, logical) (b) Assignment based on that.</p> <p>3. (a) Familiarization with 8085 simulator on PC (b) Study of prewritten program using basic instruction set (data transfer, load/store, and arithmetic, logical). (c) Assignment based on that.</p> <p>4. Programming using kit/simulator. (a) Lookup table (b) Copying a block of memory (c) Shifting a block of memory. (d) Packing and unpacking of BCD numbers. (e) Addition of BCD number (f) Binary to ASCII conversion (g) String matching</p> <p>5. Program using subroutine calls and using IN/OUT instruction using 8255 PPI on the trainer kit e.g. subroutine for delay, reading switch state and glowing LEDs accordingly, finding out frequency of pulse train etc.</p> <p>6. Interfacing any 8 bit latch (74LS373) with trainer kit as a peripheral mapped output port with absolute address decoding.</p> <p>7. Interfacing with I/O module: (a) ADC (b) Speed control of DC motor with DAC (c) Keyboard</p>	<p>CO1, CO2, CO3, CO4, CO5, CO6.</p>

(d) Multi digit display with multiplexing.

(e) Stepper motor

8. Study of 8031/8051 Micro controller kit and writing program for the following task using the kit

(a) Table look up

(b) Basic arithmetic and logical operation

(c) Interfacing of keyboard and stepper motor.