

Department of Electronics and Communication Engineering

Microprocessor Lab

Instructional Objectives:

- To understand the functioning of 8085, 8086, 8051 and ARM Processors.
- To develop the assembly language programs / coding and algorithms.
- To interface various peripheral devices with processors and controllers.
- To study the interrupt performance.
- To work with MASM, Keil, Assemblers and IAR environment.

Students Outcomes:

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

- Select the processor / controller for various application.
- Write the assembly language program for real time applications.
- Handle the various on-chip and off-chip peripheral devices
- Analyze the algorithms using various IDE platform.
- Formulate / Design a industrial automation projects.

Major Equipments available in the Lab

S. No.	Name of the Equipments	Quantity
1	8085 Microprocessor Kits	20
2	8086 Microprocessor Kits	32
3	8051 Microcontroller Kits	25
4	8251 Interface Module	5
5	8254 Interface Module	5
6	8255 Interface Module	7
7	8259 Interface Module	5
8	8279 Interface Module	7
9	Digital Clock Interface Module	2
10	Stepper Motor Interface Module	7
11	DC Motor Interface Module	3
12	Traffic Light Control Interface Module	7
13	ADC & DAC Interface Module	7 Each
14	Thermal Printer Interface	2
15	ARM Processor, Wireless Interface using Zigbee	10
16	Computers	10
17	Sensors (Temp., Vibration, Solar, Force etc.)	Adequate Nos

Courses Offered

S.No.	ODD Semester	Class	No. of Sessions	EVEN Semester	Class	No. of Sessions
1	Microprocessors and Microcontrollers Laboratory	5 th SemECE	4	Microprocessors and Microcontrollers Laboratory	4 th Sem MCT	2
2	Embedded Laboratory	7 th Sem ECE	4	Microprocessors and Microcontrollers Laboratory	4 th Sem CSE	4
				Microprocessors and Microcontrollers Laboratory	6 th Sem EEE	2
Percentage of Lab Utilization : 80%				Percentage of Lab Utilization : 80%		

List of Experiments

Microprocessors and Microcontrollers Laboratory

IV Sem CSE
V Sem ECE

8086 Programs using kits and MASM

01. Basic arithmetic and Logical operations
02. Move a data block without overlap
03. Code conversion, decimal arithmetic and Matrix operations.
04. Floating point operations, string manipulations, sorting and searching
05. Password checking, Print RAM size and system date
06. Counters and Time Delay

Peripherals and Interfacing Experiments

07. Traffic light controller
08. Stepper motor control
09. Digital clock
10. Key board and Display
11. Printer status
12. Serial interface and Parallel interface
13. A/D and D/A interface and Waveform Generation

8051 Experiments using kits and MASM

14. Basic arithmetic and Logical operations
15. Square and Cube program, Find 2's complement of a number
16. Unpacked BCD to ASCII

List of Experiments

Microprocessors and Microcontrollers Laboratory

IV Sem MCT
VI Sem EEE

01. Simple arithmetic operation: addition/subtraction/multiplication/division.
02. Programming with control instructions:
 - (i) Ascending/descending order, maximum/minimum of numbers.
 - (ii) Programs using rotate instructions. (iii) Hex/ASCII/BCD code conversions.
 - (iv) Interface dperiments: with 8085A/D interfacing & D/A Interfacing.
03. Traffic light controller.
04. I/O port/serial communication.
05. Programming practices with simulators/emulators/open source.
06. Read a key, interface display.
07. Demonstration of basic instructions with 8051 micro controller execution, including: (i) conditional jumps & looping (ii) calling subroutines.
08. Programming I/O port and timer of 8051.
 - (i) study on interface with A/D & D/A
 - (ii) Study on interface with DC & AC motors.
09. Mini project development with processors.

Embedded Laboratory

VII Sem CSE

01. Study of ARM evaluation system
02. Interfacing ADC and DAC.
03. Interfacing LED and PWM.
04. Interfacing real time clock and serial port.
05. Interfacing keyboard and LCD.
06. Interfacing EPROM and interrupt.
07. Mailbox.
08. Interrupt performance characteristics of ARM and FPGA.
09. Flashing of LEDS.
10. Interfacing stepper motor and temperature sensor.
11. Implementing zigbee protocol with ARM.