INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad – 500043

Electronics and Communication Engineering

List of Laboratory Experiments

MICROPROCESSORS AND MICROCONTROLLERS LABORATORY								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
AECB26	**Core**	**L**	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
		0	0	3	1.5	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 36**				**Total Classes:36**		
Branch: ECE	**Semester: VI**	**Academic Year: 2021-22**				**Regulation: R18**		

Course overview:

This laboratory course will facilitates the students to program 8086 microprocessor and 8051 micro- controller. Win862 software will be used for writing and debugging assembly language programs. The course includes performing arithmetic and logical operations, string manipulations, code conversions and interfacing of I/O devices to processor/controller. The hands-on experience acquired by the stu- dent's during the course makes them to carry out processor/controller based projects and extend their knowledge on the latest trends and technologies in the field of embedded system.

Course objectives:

The students will try to learn:

I. Assembly language programming skills ranging from simple arithmetic operations to interfacing real time systems.

II. The usage of software tools to design, debug and test microprocessor/microcontroller based projects using assembly language programming.

III. The design of microcomputer and microcontroller based real-time applications in the fields of communication systems, home based automation systems, automobiles and unmanned applications.

Course outcomes:

After successful completion of the course, students should be able to:

CO1: Make use of emulators and assemblers for writing, compiling andrunning an assembly language programs on training boards.

CO2: Develop Assembly language programs for accomplishing codeconversions, string manipulations and sorting of numbers.

CO3: Choose serial or parallel communication for transmitting the data between microprocessor or microcontroller and peripherals.

CO4: Utilize Analog to Digital and Digital to Analog converters withprocessor or controller for data conversion.

CO5: Select suitable registers of microcontroller and write assembly language program to verify timer or counter operations.

CO6: Build an interface between processor or controller and peripherals to provide solutions to the real world problems.

WEEK NO	EXPERIMENT NAME	CO
WEEK – I	**DESIGN A PROGRAM USING WIN862**	CO1
	Design and develop an Assembly language program using 8086 microprocessor and to show the following aspects. (a)Programming (b)Execution (c)Debugging To Demonstrate the win 862 software and Trainer kit for 8086 Microprocessor	
WEEK – II	**16 BIT ARITHMETIC AND LOGICAL OPERATIONS**	CO1, CO2
	Write an ALP program to perform 16 Bit arithmetic and logical operations using WIN862 software.	

WEEK – III	**MULTIBYTE ADDITION AND SUBTRACTION** (a) Write an ALP program to perform multi byte addition and subtraction (b) Write an ALP program to perform 3*3 matrix multiplication and addition	**CO1, CO2**
WEEK – IV	**PROGRAMS TO SORT NUMBERS** (a) Write an ALP program to perform ascending order using 8086 (b) Write an ALP program to perform descending order using 8086	**CO1, CO2**
WEEK – V	**PROGRAMS FOR STRING MANIPULATIONS OPERATIONS** (a) Write an ALP program to insert or delete a byte in the given string (b) Write an ALP program to search a number/character in a given string (c) Write an ALP program to move a block of data from one memory location to the other (d) Write an ALP program for reverse of a given string.	**CO1, CO2**
WEEK – VI	**CODE CONVERSIONS** (a) Write an ALP program to convert packed BCD to Unpacked BCD (b) Write an ALP program to convert packed BCD to ASCII (c) Write an ALP program to convert hexadecimal to ASCII	**CO1, CO2**
WEEK – VII	**INTERFACING STEPPER MOTOR** (a) Write an ALP program to rotate stepper motor in clockwise direction (b) Write an ALP program to rotate stepper motor in anti clockwise direction	**CO1, CO6**
WEEK –VIII	**INTERFACING ADC and DAC DEVICES** (a) Write an ALP program to convert analog to digital using 8086 (b) Write an ALP program to convert digital to analog using 8086	**CO1, CO4**
WEEK - IX	**INTERFACING KEYBOARD TO 8086** Write an ALP program to interface keyboard to 8086	**CO1, CO6**
WEEK - X	**SERIAL AND PARALLEL COMMUNICATION** (a) Parallel communication between two microprocessors using 8255 (b) Serial communication between two microprocessor kits using 8251	**CO1, CO3**
WEEK - XI	**INTERFACING TRAFFIC LIGHT CONTROLLER AND TONE GENERATOR** (a) Write a program to interface traffic light controller (b) Write an ALP program to interface tone generator	**CO1, CO6**
WEEK - XII	**ARITHMETIC AND LOGICAL OPERATIONS USING 8051** Write an ALP program to perform 16 Bit arithmetic and logical operations using 8051 microcontroller.	**CO1, CO2**
WEEK - XIII	**TIMER / COUNTER** Write an ALP Program and verify Timer / Counter using 8051	**CO1, CO5**
WEEK - XIV	**INTERFACING KEYBOARD TO 8051** Write an ALP program to interface keyboard to 8051	**CO1, CO6**