MICROPROCESSORS AND INTERFACING LABORATORY

VI Semester: IT								
Course Code	**Category**	**Hours / Week**			**Credits**	**Maximum Marks**		
		L	**T**	**P**	**C**	**CIA**	**SEE**	**Total**
AEC115	**Core**	-	-	3	2	30	70	100
Contact Classes: Nil	**Tutorial Classes: Nil**	**Practical Classes: 45**				**Total Classes: 45**		

OBJECTIVES:

The course should enable the students to:

I.   Developing of assembly level programs and provide the basics of the microprocessors.

II. Provide solid foundation on interfacing the external devices to the processor according to the user requirements to create novel products and solutions for the real time problems.

III. Understand various interfacing circuits necessary for various applications.

COURSE OUTCOMES:

CO1. Familiarize with the assembly level programming using 8086 microprocessor.
CO2. Design circuits for various applications using microprocessor.
CO3. An in-depth knowledge of applying the concepts on real- time applications
CO4. Design and apply interfacing circuits for different applications
CO5. Understand the basic concepts of 8086 microprocessors with their application

COURSE LEARNING OUTCOMES (CLOs):

1. Design and develop an Assembly language program using 8086 microprocessor.

2. Understand the 8 and 16 Bit arithmetic and logical operations using WIN862 software.

3. Understand the program to perform multi byte addition, subtraction and 3*3 matrix multiplications.

4. Understand the program to perform ascending and descending order using 8086

5. Understand the program to perform LCM & HCF, square and cube of a given numbers.

6. Understand the programming concepts on strings using 8086

7. Understand the programming for Code converters.

8. Design and interacting stepper motor to 8086.

9. Analyze and interfacing to convert analog to digital.

10. Analyze and interfacing to convert digital to analog.

11. Develop and design a ALP program to interface stepper motor to 8086.

12. Develop and design a ALP program for serial and parallel communication between two microprocessors.

13. Develop and design an Interface traffic light controller and tone generator using 8086.

LIST OF EXPERIMENTS	
Week-1	**DESIGN APROGRAM USING WIN862**
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 Tool Chain for WIN862 and Hardware for 8086 Microprocessor.
Week-2	**8 AND 16 BITARITHMETIC OPERATIONS**
	a. Write an ALP program to perform 8 Bit arithmetic operations using WIN862 software and 8086. b. Write an ALP program to perform 16 Bit arithmetic operations using WIN862 software and 8086.
Week-3	**PALINDROME, ABSTRACT CLASS**
	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.
Week-4	**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.
Week-5	**PROGRAMS TO LCM & HCF NUMBERS**
	a. Write an ALP program to find the LCM & HCF of given numbers. b. Write an ALP program to find square and cube of a given numbers.
Week-6	**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.
Week-7	**PROGRAMS FOR STRING MANIPULATIONS OPERATIONS**
	a. Write an ALP program to move a block of data from one memory location to the other b. Write an ALP program for reverse of a given string.
Week-8	**PROGRAMS FOR STRING MANIPULATIONS OPERATIONS**
	a. Write an ALP program to find the number of even and odd numbers in the given string. b. Write an ALP program to generate a Fibonacci series.
Week-9	**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
Week-10	**INTERFACING ADC & 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.
Week-11	**GENERATE SQUARE,SINE AND TRIANGLE WAVES**
	Write an ALP program to generate Saw tooth and staircase wave forms
Week-12	**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.

Week-13	**PARALLEL AND SERIAL COMMUNICATION**
a. Parallel communication between two microprocessors using 8255. b. Serial communication between two microprocessor kits using 8251.	
Week-14	**INTERFACING TRAFFIC LIGHT CONTROLLER AND TONE GENERATOR**
a. Write an generator ALP program to interface traffic light controller b. Write an ALP program to interface tone generator.	

Text Books:

1. D. V. Hall, "Microprocessors and Interfacing", TataMcGraw-Hill Education, 3rd Edition 2013.
2. 2. A. K Ray, K. M. Bhurchandani, "Advanced Microprocessors and Peripherals", TataMcGraw-Hill Education, 2nd Edition 2006.

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1. D. V. Hall, ‒Microprocessors and Interfacing‖, Tata McGraw-Hill Education, 3rd Edition 2013.
2. A. K Ray, K. M. Bhurchandani, ‒Advanced Microprocessors and Peripherals‖, Tata McGraw-Hill Education, 2nd Edition 2006.
3. Lyla B. Das, ‒The x86 Microprocessors‖, Pearson India, 2nd Edition, 2014.

Web Reference:

1. http://nptel.ac.in/courses/106108100/
2. http://www.eazynotes.com/pages/microprocessor/8086-programs.html
3. http://80864beginner.com/