

## MICROPROCESSORS AND INTERFACING LABORATORY

V Semester: CSE								
Course Code	Category	Hours / Week			Credits	Maximum Marks		
AEC115	Core	L	T	P	C	CIA	SEE	Total
		-	-	3	2	30	70	100
<b>Contact Classes: Nil</b>	<b>Tutorial Classes: Nil</b>	<b>Practical Classes: 45</b>			<b>Total Classes: 45</b>			
<p><b>OBJECTIVES:</b>  <b>The course should enable the students to:</b></p> <ol style="list-style-type: none"> <li>Developing of assembly level programs and provide the basics of the microprocessors.</li> <li>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.</li> <li>Understand and develop assembly language programming with various applications.</li> </ol> <p><b>COURSE LEARNING OUTCOMES (CLOs):</b></p> <ol style="list-style-type: none"> <li>Design and develop an Assembly language program using 8086 microprocessor.</li> <li>Understand the 16 Bit arithmetic and logical operations using WIN862 software.</li> <li>Understand the program to perform multi byte addition, subtraction and 3*3 matrix multiplications.</li> <li>Understand the to perform ascending and descending order using 8086</li> <li>Understand the programming concepts on strings using 8086</li> <li>Understand the programming for Code converters.</li> <li>Design and interacting stepper motor to 8086.</li> <li>Analyze and interfacing to convert analog to digital.</li> <li>Analyze and interfacing to convert digital to analog.</li> <li>Develop and design a ALP program to interfacing keyboard to 8086.</li> <li>Develop and design an Interface traffic light controller and tone generator using 8086.</li> <li>Develop and design an ALP program to interfacing Elevator to 8086.</li> </ol>								
<b>LIST OF EXPERIMENTS</b>								
<b>Week-1</b>	<b>DESIGN A PROGRAM USING WIN862</b>							
Design and develop an Assembly language program using 8086 microprocessor and to show the following aspects. <ol style="list-style-type: none"> <li>Programming</li> <li>Execution</li> <li>Debugging</li> </ol> To Demonstrate the Tool Chain for MASM and Hardware for 8086 Microprocessor.								
<b>Week-2</b>	<b>16 BIT ARITHMETIC AND LOGICAL OPERATIONS</b>							
Write an ALP program to perform 16 Bit arithmetic and logical operations using WIN862 software.								

<b>Week-3</b>	<b>MULTIBYTE ADDITION AND SUBTRACTION</b>
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.	
<b>Week-4</b>	<b>PROGRAMS TO SORT NUMBERS</b>
a. Write an ALP program to perform ascending order using 8086. b. Write an ALP program to perform descending order using 8086.	
<b>Week-5</b>	<b>PROGRAMS FOR STRING MANIPULATIONS OPERATIONS</b>
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 & Write an ALP program for reverse of a given string.	
<b>Week-6</b>	<b>CODE CONVERSIONS</b>
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	
<b>Week-7</b>	<b>INTERFACING STEPPER MOTOR</b>
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.	
<b>Week-8</b>	<b>INTERFACING ADC &amp; DAC DEVICES</b>
a. Write an ALP program to convert analog to digital using 8086. b. Write an ALP program to convert digital to analog using 8086.	
<b>Week-9</b>	<b>INTERFACING TRAFFIC LIGHT CONTROLLER AND TONE GENERATOR</b>
a. Write an generator ALP program to interface traffic light controller b. Write an ALP program to interface tone	
<b>Week-10</b>	<b>INTERFACING KEYBOARD</b>
Write an ALP program to interfacing keyboard to 8086	
<b>Week-11</b>	<b>SERIAL AND PARALLEL COMMUNICATION</b>
a. Parallel communication between two microprocessors using 8255. b. Serial communication between two microprocessor kits using	
<b>Week-12</b>	<b>INTERFACING ELEVATOR</b>
Write an ALP program to interfacing Elevator to 8086	
<b>Text Books:</b>	
1. D. V. Hall, “Microprocessors and Interfacing”, TataMcGraw-Hill Education, 3 <sup>rd</sup> Edition 2013. 2. A. K Ray, K. M. Bhurchandani, “Advanced Microprocessors and Peripherals”, TataMcGraw-Hill Education, 2 <sup>nd</sup> Edition 2006.	
<b>Reference Books:</b>	
1. N. Senthil Kumar, M. Saravanan, S. Jeevanathan, S. K. Shah, “Microprocessors and Interfacing”, Oxford University, 1 <sup>st</sup> Edition, 2012. 2. Lyla B. Das, “The x86Microprocessors”, Pearson India, 2 <sup>nd</sup> Edition, 2014 3. Daniel Tabak, “Advanced Microprocessors”, Addison-Wesley, 2 <sup>nd</sup> Edition, 1996. 4. Triebel, Singh, “The 8088 and 8086 Microprocessors”, PHI, 4 <sup>th</sup> Edition 2003.	
<b>Web Reference:</b>	
1. <a href="https://www.tutorialspoint.com/microprocessor/microprocessor_io_interfacing_overview.html">https://www.tutorialspoint.com/microprocessor/microprocessor_io_interfacing_overview.html</a> 2. <a href="https://www.slideshare.net/VikasGupta319/interfacing-memory-with-8086-microprocessor">https://www.slideshare.net/VikasGupta319/interfacing-memory-with-8086-microprocessor</a>	