

Course code	Course Name	L-T-P-Credits	Year of Introduction
CS332	MICROPROCESSOR LAB	0-0-3-1	2016
<b>Pre-requisite:</b> CS305 Microprocessors and Microcontrollers			
<b>Course Objectives</b> <ul style="list-style-type: none"> <li>• To practice assembly language programming on 8086.</li> <li>• To practice fundamentals of interfacing/programming various peripheral devices with microprocessor/microcontroller.</li> </ul>			
<b>List of Exercises/ Experiments: (Minimum 12 Exercises/ Experiments are mandatory. Exercises/ Experiments marked with * are mandatory)</b>			
<b>I. Assembly Language Programming Exercises/Experiments using 8086 Trainer kit</b> <ol style="list-style-type: none"> <li>1. Implementation of simple decimal arithmetic and bit manipulation operations.*</li> <li>2. Implementation of code conversion between BCD, Binary, Hexadecimal and ASCII.</li> <li>3. Implementation of searching and sorting of 16-bit numbers.</li> <li>4. Programming exercises using stack and subroutines.*</li> </ol>			
<b>II. Exercises/Experiments using MASM (PC Required)</b> <ol style="list-style-type: none"> <li>5. Study of Assembler and Debugging commands.</li> <li>6. Implementation of decimal arithmetic( 16 and 32 bit) operations.*</li> <li>7. Implementation of String manipulations.*</li> <li>8. Implementation of searching and sorting of 16-bit numbers.</li> <li>9. Implementation of Matrix operations like addition, transpose, multiplication etc.</li> </ol>			
<b>III. Interfacing Exercises/Experiments with 8086 trainer kit through Assembly Language Programming</b> <ol style="list-style-type: none"> <li>10. Interfacing with stepper motor - Rotate through any given sequence.*</li> <li>11. Interfacing with 8255 (mode0 and mode1 only).*</li> <li>12. Interfacing with 8279 (Rolling message, 2 key lock out and N-key roll over implementation).*</li> <li>13. Interfacing with 8253/54 Timer/Counter.</li> <li>14. Interfacing with Digital-to-Analog Converter.*</li> <li>15. Interfacing with Analog-to- Digital Converter.</li> <li>16. Interfacing with 8259 Interrupt Controller.</li> </ol>			
<b>IV. Exercises/Experiments using 8051 trainer kit</b> <ol style="list-style-type: none"> <li>17. Familiarization of 8051 trainer kit by executing simple Assembly Language programs such as decimal arithmetic and bit manipulation.*</li> <li>18. Implementation of Timer programming (in mode1).</li> <li>19. Implementation of stepper motor interfacing, ADC/DAC interfacing and sensor interfacing with 8251 through Assembly Language programming.</li> </ol>			
<b>Expected Outcome</b> The students will be able to <ol style="list-style-type: none"> <li><i>i.</i> Develop assembly language programs for problem solving using software interrupts and various assembler directives.</li> <li><i>ii.</i> Implement interfacing of various I/O devices to the microprocessor/microcontroller through assembly language programming.</li> </ol>			