

EMBEDDED SYSTEMS LAB

(Common to CSE & IT)

Course Code: 15CT1122

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Course Outcomes :

At the end of the Course, the Student will be able to:

- CO 1** Implement number conversions.
- CO 2** Create delays between events and speed control programs.
- CO 3** Write programs in assembly language.
- CO 4** Design applications by interfacing system peripherals.
- CO 5** Create serial communication buses.

LIST OF PROGRAMS:

1. ELEMENTARY OPERATIONS USING DIRECT AND INDIRECT ADDRESS
MODES:
 - i. Multi precision Addition, Subtraction, Multiplication and division
 - ii. Handling Fractional numbers
 - iii. BCD-Binary Conversion examples
 - iv. ASCII to BCD conversion
 - v. Binary to ASCII conversion
2. INPUT OUTPUT CONTROL PROGRAMMING.
 - i. Controlling the external logical switching, for DC motors,Steppers
 - ii. Timers and Counters with and without Interrupts

- iii. Pulse width modulation for speed control.
- iv. Capture control of external events
- 3. PROGRAMMING USING BUILT IN TIMERS.
 - i. As Event Timers
 - ii. As fast Counters
 - iii. Frequency Generation
- 4. CAPTURE CONTROL AND ITS APPLICATION EXAMPLES
 - i. Measurement of pulse width
 - ii. Measurement of Duty cycle,
 - iii. Measurement of velocity and acceleration.
- 5. SERIAL COMMUNICATION METHODS.
 - i. USART and its programming
 - ii. SPI bus and its programming
- 6. SINE WAVE GENERATION.

TEXT BOOKS:

- 1. Ali Mazidi Mohammed Gillispie, Mazide Janice, “The 8051Microcontroller and Embedded Systems using assembly & C”, 2nd Edition, Pearson Education, 2008
- 2. Muhammad Ali Mazidi, SarmadNaimi and SepehrNaimi, “The AVR microcontroller and Embedded Systems Using Assembly and C”, 1st Edition, Pearson Education,2011