MICROPROCESSOR AND MICROCONTROLLERS (LAB)
EE-212 L

Pre-requisite: Digital Logic Design
Credit Hours 01
Contact Hours 48

RECOMMENDED BOOKS

- Malvino, Brown,"Digital Computer Electronics", 3rd Edition, 1992, Glencoe. ISBN: 978-0-02-800594-2
- Muhammad Ali Mazidi, Rolin D. McKinlay, Janice G. Mazidi, "The 8051 Microcontroller: A Systems Approach", 1st Edition, 2013, Pearson. ISBN: 978-0-13-508044-3

REFERENCE BOOKS

- Scott MacKenzie, Raphael C.-W. Phan "The 8051 Microcontroller",4th Edition, 2007, Pearson. ISBN 0-13-205975-4
- Kenneth J. Ayala, "The 8051 Microcontroller", 3rd Edition, 2004. West Publishing. ISBN: 978-1-40-186158-2

OBJECTIVE OF COURSE

The objective of this lab is to familiarize students with working principles of Simple as Possible (SAP) computer. Implementation of each step involved in fetching, decoding and executing each instruction at every timing state. Implementation of complete SAP in Proteus simulation software. Second phase of the labs involve implementation of programs written in C language on 8051 Microcontroller using Kiel compiler. Apply Port Interfacing, Timers / Counters, Serial Communication, Interrupt Programming, Analog to Digital Conversion using AT89C51 microcontroller.

S.NO	CLO/PLOs MAPPING	DOMAIN	PLO
01	**Apply** SAP-I on Proteus Simulator	C3	05
02	**Apply** C language codes on AT89C51 microcontroller using Kiel Compiler	C3	05
03	**Develop** programs of AT89C51 microcontroller for timers, counters, interrupts, serial communication, analog to digital conversion, LCD and seven segment display.	C5	05

COURSE CONTENTS

1. Introduction to SAP-I and Implementation of Program Counter, Accumulator, Adder-Subtractor and B-Register.
2. Implementation of Input and MAR, RAM, RAM Programming, Instruction Register, Output Register & Binary Display Modules of SAP-I.
3. Implementation of SAP-I Controller / Sequencer and Complete Integration of SAP-I.
4. Introduction to 8051 Microcontroller and I/O Port Programing using LED Interfacing.
5. Seven Segment Display Interfacing and Programming with 8051 Microcontroller.
6. Keypad Interfacing with 8051 Microcontroller.
7. LCD Interfacing Counter Mode Programming with 8051 Microcontroller.
8. Analog to Digital Converter (ADC) interfacing with 8051 Microcontroller.
9. Timer / Counter Mode Programming with 8051 Microcontroller.
10. Serial Communication between PC and 8051 Microcontroller.
11. Interrupt Based Programming with 8051 Microcontroller.
12. Semester Term Project.