



# Workshop on MCS 51 family Micro-Controller (8051), Arduino and Embedded C

## Contents of Embedded System Training Program (MCS 51 family Controller)

Sr. No.	Topic	Duration
1.	Introduction to Embedded System	0.5 hr
2.	Introduction to MCS 51 family microcontroller	0.5 hr
3.	Introduction to architecture Different port functioning (pin diagram)	0.5 hr
4	Introduction to microcontroller practical board	0.5 hr
5	<b>Introduction to Keil (Embedded C programming and debugging software)</b>	2 hr
6	Introduction to Embedded C Data types in Embedded C Syntax for loops in Embedded C	2 hr
7	<b>Introduction to Proteus ( simulator to simulate hardware prototype)</b>	1 hr
8	Design of microcontroller based circuit using Proteus.	1 hr
9	<b>Interfacing of LEDs.</b> i) Programming for dancing LEDs. ii) Design of Delay subroutine as per requirement. iii) Changing LEDs Dancing pattern using micro switch by polling.	1.5 hr
10	Interfacing of driver circuit and relay and its programming	1 hr
11	Interfacing of sensors and its programming.	1 hr
12	<b>Introduction to interrupt and timer</b> i) Changing LEDs Dancing pattern using micro switch by interrupt.	1 hr

	ii) Delay programming using timer.	
13.	Counter design by 7 seg. Display (Mini Project)	1 hr.
14	Mini project to count the no. of persons	1 hr.
15	Mini project Automatic street light control	1.5 hrs.
16	<b>Introduction to LCD</b> <ol style="list-style-type: none"> <li>1. Interfacing of LCD with microcontroller.</li> <li>2. Programming of LCD through microcontroller <ol style="list-style-type: none"> <li>a) Programming for initialization of LCD using different command words.</li> <li>b) Programming to display the alphabets and numbers on LCD.</li> <li>c) Programming to display the alphabets and numbers on LCD using lookup table.</li> </ol> </li> </ol>	2 hrs.
17.	<b>Water level indicator</b>	1 hr.
18.	<b>Introduction to serial communication and its programming</b> <ol style="list-style-type: none"> <li>a) Interfacing of microcontroller board with PC through serial communication.</li> <li>b) Programming to receive data from pc keyboard and display it on LCD.</li> </ol>	2 hrs.
19.	Programming logic and programming for obstacle detector robot. Programming logic and programming for line follower robot.	1 hr.
20	Introduction to assembly level language. Difference between asm and embedded C language Introduction to simulator (Program Studio) for asm.	1 hr.

## Arduino and Embedded C

### Course Content

Sr. No.	Content	Duration
1.	Introduction to Arduino board	0.5 hr
2.	Installation of Arduino Software	0.5 hr
3.	Pin mapping of Arduino with ATMEGA 328/ 8	20min
4.	Software Basics	0.5 hr
5	Intefacing of LED with board. Writing a program to on and off the LED with interval of 1 second	0.5 hr
6.	Interfacing of 7 segment displpay and its programming.	1 hr.
7.	Interfacing of Buzzer to genrate different audio tones.	40 min
8.	Interfacing of 16x2 LCD display and its Programming. Writing program for different display patterns on LCD.	1.5 hr.

9.	Intefacing of switch and LED to Board	1 hr.
10.	ADC Programming Writing a program to display analog voltage on LCD.	1.5 hr.
11.	Design of temperature indicator and controlling System.	1.5hr.
12	Water level indicator	1 hr.
13	Home appliance control using remot	1.5hr.
14	Display Name of student using 5 LEDs only *	1.5 hr.
15	wireless controlling of robot via remot control*	1.5 hr.
16	Line follower robot*	1.5 hr.

Duration Of Workshop : 40 to 50 Hrs.

All experimental material will be provide for experimental purpose during course.

Fees : Rs. 2500/-

Call for more Details: 9552811938

MDB Electrosoft

