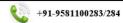## ROBOTICS

Robotics is the most fascinating field now a days for engineers, as huge automation is coming into all the segments. Robotics is the engineering science and technology of robots, their design, manufacturing, application and structural disposition. Robotics is related to electronics, mechanics, and software.

ABOUT WORKSHOP

This is a workshop on the basics of robotics. The participants will be taught how to build and operate simple manual robots during the course of the workshop. It is hands-on workshop where the students will be allowed to build the robots that they have learnt about.

<u>From this work shop one can learn</u> :

<u>Basics of Electronics</u> :

- ➢ Practical understanding of all major electronic components
- ➢ Working with Resistors, Diode, capacitor, LED, ZENER, Basic ICs

<u>Introduction to Robotics</u> :

- ➢ History of Robotics
- ➢ Types of Robotics
- ➢ Future of Robotics
- ➢ Current trends in Robotics
- ➢ Robotics Applications

<u>Basic Parts of Robotics</u> :

- ➢ Controllers
- ➢ Sensors
- ➢ Actuators

<u>Introduction to Microcontroller</u> :

- ➢ Description about Microcontroller
- ➢ Difference between Microcontroller and Microprocessor
- ➢ Explaining Different Controllers
- ➢ Why we use AVR?

Introduction to AVR :

> - Atmel(Atmega8/16/32/644)
> - Features of Controllers & PIN Description about Controller
> - The AVR Architecture , Hardware Details , AVR Memory Organization
> - I/O Port Organization , On Chip Peripherals
> - Source and Sink Concepts.
> - Integrating Develop Environment (IDE).

Introduction to Flow Code :

> - Advantages of Flow code
> - Environment of Flow code.
> - Programming using Flow carts , Tips to enhance programming skills
> - Writing Simple Programs (LEDs, Switches).
> - Robot Programming.
> - Dumping Technique (progisp1.7).

Sensors :

> - IR Sensors-Designing & development
> - Light searching sensor- Designing & development
> - Touch Sensor- Designing & development
> - Temperature sensor

Locomotion system of Robotics :

> - Actuators
> - Types of Motors
> - Driving mechanism
> - Speed Control

Motor Drivers :

> ➢ H-Bridge using transistor
> ➢ L293D
> ➢ L298D
> ➢ ULN2003

Assembling of complete robot :

> ➢ Interfacing of motors and check the movement of motor
> ➢ Interfacing of sensors
> ➢ Assembling of parts like AVR Board , Chassis

The hands-on sessions will include :

> ➢ Building of Line Follower
> ➢ Building Obstacle Avoider Robots
> ➢ Building Light Chaser Robot
> ➢ Building of Switch controller Robot

The execution of workshop depends on the availability of time and interest of participants.

TECHNOLOGY LEARNING CENTER
..Finishing School for Engineer's

Who can join this?

B.E/B.Tech/Diploma students of any branch, as this is the basic course in Robotics and an excellent module for beginners.

Workshop Highlights

Basic knowledge of Electronic components

Their working principle with practical implementation

Assembling of your own Robot

Basics of Robotics

The mechanism behind the Robots

Benefits to the Participants

☐ Certificate to every participant

☐ Lecture by Industry Experts

☐ Professional Industrial environment for Project work

☐ **Free**Softcopy **of workshop content**

☐ Technology Learning Center "Summer Training Program" Redemption Coupon

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✉ info@tlcindia.org

www.tlcindia.org

📞 +91-9581100283/284

Our Requirement for the program

- Minimum of 50 teams for conducting the workshop
- One Computer CD-ROM drive for each team or students are requested to get their laptop preferably with Windows OS.
- LCD projector and microphone PA system.
- Seminar hall or computer lab for conducting the workshop.

Workshop Duration:

- 2 Days [7 Hours/Day]

Pre-requisites:

The modules are designed in order to cater the basics of Robotics and coding however following pre-requisites will be an added advantage.

- Basic knowledge of C programming.
- Basic Electronics.