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Workshop Highlights

- Construct robot by scratch.
- Concept of development board
- Move Robot in Different Direction.
- Learn wiring of Motor Driver.
- Concept of Motor Driver.
- Connection of Microcontroller to Motor

Topics to be covered in workshop

The Microcontroller Platform

- The Open-Microcontroller Platform
- Development board Basics.
- Microcontroller Board Layout & Architecture.
- Testing the development board.
- Setting IDE
- Interfacing of board (Hardware with Software)

Programming fundamentals (C language)

- Arduino Programming
- Programming basics
- Uses of keywords
- Writing the first code.

Introduction to Robotics

- Types of Robots.
- Demand of Robots.
- Uses of Robots.
- Future of Robots.

Construction & Wiring of Robots

- Identifying parts required for building a Robot.

- *Construction of Robot.*
- *Introduction to Motor Driver.*
- *Motor Driver Working.*
- *Wiring between Microcontroller & Motor Driver*

Projects:

- Project 1: *Moving robot forward*
- Project 2: *Moving robot backward*
- Project 3:   *Making a square*
- Project 4: *Angular right*
- Project 5: *Angular left*
- Project 6: *Axial turn*
- Project 7: *Radial turn*
- Project 8: *Permanent Stop*

KIT Content of Sensor Robot

- *Arduino Circuit Board*
- *Micro Controller-ATMEL Atmega 328*
- *Operating Voltage -5V*
- *Input Voltage – 6V-20V*
- *Digital I/O Pins - 14 out of which 6 provide PWM*
- *Analog Pins – 8*
- *DC Current per I/O pin -40mA*
- *Flash Memory – 16KB*
- *SRAM – 1KB*
- *EEPROM - 512Bytes*
- *Clock Speed – 16MHz*
- *USB-UART Converter*
- *Proper Indicators LED's*
- *USB/EXT Input Voltage*
- *5V output supply pins – 3*
- *3.3V output supple pins – 1*

- *Breadboard Compatibility(Dimension of a 40 pin DIP IC)*
- *2 Multipurpose Photo Sensor*
- *1 Sound Sensor*
- *ACRYLIC Multipurpose Robot Chasis*
- *Plastic Wheels*
- *DC Motors*
- *360' Castor Wheel*
- *Battery(9V)*
- *A to B USB Cable for Programing*
- *Connecting Wires*
- *Screw*

Course Outcome

After completion of the course students will be able to design their own bots. They will learn about the components functioning and their application in order to develop their own projects.

Requirements from college:

- *Faculty & 2 Student Co-coordinator's Name & Number*

- *Projector/screen for presentation purpose.*

- *Public address system or two mikes (cordless if possible).*

- *Seminar Hall with capacity proportional to the Student count*

- *A computer/Laptop in team of 5.*

- *One Extension Board in a group of 5*

8 Advantages of Robotics

Fewer errors

Higher quality

Less downtime

Higher productivity

Less space utilization

More energy efficiency

Improved security and control

Reduction in pick, pack and ship times

Key Benefits of **RPA**

- Improved Customer Experience
- Increased Degree of Flexibility
- Enhanced Management Capabilities
- Enhanced Scalability of Solutions
- Increased Efficiency & Compliance
- Improved Levels of Agility