



Robotics & Mechatronics Curriculum

Introduction to Robotics & Mechatronics

- 1. understand robotics & mechatronics
- 2. understating how mechanical parts are controlled by electronics through embedded system.
- 3. using micro controller to control mechanic all components
- 4 industries' where robotics and mechatronics is used.

Introduction to Open Source platform

- An Overview of Open Hardware

- Arduino Board Description
- Difference between Microcontroller and Microprocessor
- Microcontroller architecture and Interfacing
- Introduction to Microcontrollers & the Arduino Platform
- How can we use microcontroller in our circuits

Introduction to Programming Language

- Programming Languages- Assembly Vs Embedded 'C'
- Microcontroller Programming using Embedded 'C'

Introduction to software tool chain

- Software Installation
- Getting started with the Arduino IDE to start writing your first program
- Writing your First 'Embedded C' Program

Interfacing of I/O devices LEDs

- Types of LEDs.
- How LEDs works?
- How LEDs will glow in sequence?
- Interfacing of LED with Arduino

Buzzer

- Types of Buzzer
- Uses of Buzzer in Real Time
- Interfacing of Buzzer with Arduino

Sensor

- What is Sensor
- Different Types of Sensor •
- Interfacing of Different sensor.

Mechanical Assembling of Robot

- Part names & specification
- How to connect different parts
- Interfacing of parts with each other

Actuators

- Introduction of actuators
- Actuators & Motors
- Types of motors

Motor Driving Systems

- Introduction of actuators
- Actuators & Motors
- Types of motors

Servo Motor

- Basic Fundamentals of Servo Motor
- Different Types of servos
- Uses of servomotor

Mechanical Arrangement to ease the fire detection

- Types of mechanical arrangement
- Uses of servo motor in mechanical arrangement.
- Angle specification with servos

Mechanical Arrangement for water dispensing

- Mechanical placement of water pump and water pipe.
- Different ways to dispense water.
- Angle specification with servos

Serial Communication

- Difference between Parallel and Serial Communication
- USART / UART Protocol
- Bluetooth communication
- Difference between different Types of Bluetooth Modules

Java Script & HTML5

- Using Java Script and HTML 5 to develop web interface to control the robotic application

Projects

- Developing Robotics project