

# **Humanoid Robotics Workshop**

## **Session 1**

Introductory & Theoretical session

- Introduction to Robotics.
- Robots and Law of Robots.
- Future aspects.
- Need of Microcontrollers in Autonomous Robots.
- Different parts of Robot.
- Wide description about Microcontrollers.
- Wide description about Arduino Board
- Input & Output peripherals in Microcontrollers.
- Resistors in Microcontrollers.
- Programming of Microcontrollers.

## **Session 2:**

- Kits Distribution
- Software's Installation
- Practical session
- Introduction of Arduino
- Input / Outputs of Arduino
- Interfacings of peripherals.
- Output devices interfacings.
- Practical 1: Programming for LED interfacings with Arduino.
- Practical 2: Different modes of LED blinking.

## **Session 3**

- Motor Interfacing
- Types of motors
- Actuators to be used in Robots.
- Wide description about Servo Motor
- Interfacing of Servo Motor with Arduino
- Practical 3: Controlling different angles of servo motors
- Practical 4: Development of structure of Robotic Leg
- Project 1: Development of a Robotic Leg.

## **Session 4**

- Humanoid Structure
- Body Parts of the Robot
- Joints and Lengths calculations
- Calculate the center value of each motor
- Dimensions and curves

- Clamps and their fitting
- Project2: Humanoid Structure Development
- Testing of all the Joints and Rotation of all motor angles