



**KARUNYA INSTITUTE OF TECHNOLOGY AND SCIENCES**  
(Declared as Deemed to be University under Sec. 3 of the UGC Act 1956)  
A CHRISTIAN MINORITY RESIDENTIAL INSTITUTION  
AICTE Approved & NAAC Accredited  
Karunya Nagar, Coimbatore - 641 114, Tamil Nadu, India

## **DEPARTMENT OF MECHANICAL ENGINEERING**

### **ROBOTICS AND AUTOMATION LAB**

The purpose of this laboratory is to motivate and familiarize students with industrial robots and automation systems. Also, it provides hands on experience in various automation and robotic experiments to meet current industrial trend for budding engineers. This will help the students to get ready for the placement in leading automotive as well as core mechanical industries. Above all, the industrial automation integrated with robotics will give better products with affordable rates.

#### **COURSE OBJECTIVES:**

To impart knowledge on

1. Fundamentals of fluid power and Mechatronics and primary actuating systems.
2. Programming skills in Programmable logic controllers.
3. Principles of pneumatics and hydraulics and apply them to real life problems.

#### **COURSE OUTCOMES:**

After completing the course the students will be able to

1. Apply Boolean algebra for logic design of pneumatic circuits.
2. Apply Boolean algebra for logic design for hydraulic circuits.
3. Build logic circuits for industrial applications.
4. Build cascade circuits for multiple cylinder applications.
5. Design automation circuits with PLC for industrial problems.
6. Write program me for robot movements.

## Facilities available for regular class work, project, research and consultancy

- ✓ Standard Fluid Power Symbol
- ✓ Pneumatic Logic Circuit kit
- ✓ Pneumatic Circuit for Material handling system kit
- ✓ Electro-Pneumatic Circuit using Relay Kit
- ✓ Electro-Pneumatic Circuit using Limit switches Kit
- ✓ Electro-Pneumatic Circuit using Solenoid Valve Kit
- ✓ Electro Pneumatic for double acting cylinder using cascade system
- ✓ Electro-Hydraulic circuit using Proximity sensors Kit
- ✓ PLC pneumatic logic circuit for Material handling system kit
- ✓ Modular Production System
- ✓ Stepper Motor Drive
- ✓ Process Automation System
- ✓ Fanuc robot
- ✓ SCARA Robot
- ✓ SCOROBOT
- ✓ Mini Robot
- ✓ Robot Assembly Kit

## Major equipment's



**Modular Production System  
FESTO, GERMANY**



***STEPPER MOTOR DRIVE  
TECHNOLOGY  
FESTO, Germany***



***Process Automation  
FESTO, Germany***





# **FANUC ROBOT**



<b>FANUC ROBOT LR MATE 100iB</b>	
MAKE	: FANUC
CONTROLLER AXIS	: 5
MAX. LOAD CAPACITY	: 5 kg
MAX. SPEED	: 320, 185, 365, 240, 720 (deg)
MOTION RANGE	: 240, 270, 330, 480 (deg/ cc)
REPEATABILITY	: ±0.04 mm
CONTROLLER	: R-31b Mate
DATE OF PURCHASE	: 07.04.2005
COST	: Rs. 8,99,694/-



**SCARA ROBOT**

## **List of experiments:**

1. Standard Fluid Power Symbols.
2. Pneumatic Basic Logic Circuits.
3. Pneumatic Circuit for Material Handling System.
4. Electro pneumatic circuit using Relay, Limit Switch and solenoid Valves.
5. Electro-pneumatic circuit for an Automation of Double Acting Cylinder by using proximity Sensors and Cascade System of sequence A+B+ C+ A- B- C-
6. Electro –Hydraulic circuit using proximity Sensors.
7. PLC controlled pneumatic Logic circuits
8. PLC controlled pneumatic circuit for Material Handling system
9. Control of Fanuc robot.
10. Robot programming for pick and place application.
11. Assembly and disassembly of PLC controlled based mobile robot.
12. Programming for interfacing of sensors.



Lab in charge:

Dr. G. Babu Rao, M.E., Ph.D Assistant Professor



Dr. D. Arul Kirubakaran, M.E., Ph.D, Assistant Professor



Lab technicians:

Mr. K. Sivasankaran, D.M.E., B.E., Engineering Technician

