Department Facilities

The Department of Robotics and Automation is equipped with advanced laboratory infrastructure to provide experiential learning in industrial robotics, automation systems, and additive manufacturing. These facilities enable students to bridge theoretical knowledge with practical implementation through hands-on training, research projects, and industrial simulation exercises.

SCARA Robot

Overview

The SCARA (Selective Compliance Assembly Robot Arm) robot is an industrial-grade robotic manipulator specifically designed for high-speed, high-precision assembly and material handling operations. It provides students with real-time exposure to industrial automation environments and robotic programming practices.

Technical Capabilities

- 4-axis robotic configuration
- High positional accuracy and repeatability
- Servo motor-driven joints
- Programmable through industrial controller interface
- Supports end-effectors such as grippers and suction cups

Academic Utilization

- Robot kinematics and dynamics experiments
- Trajectory planning and motion control
- PLC and robot integration studies
- Industrial automation case studies
- Mini-projects and research work

Industrial Applications

- Electronic component assembly
- Pick-and-place operations
- Packaging automation
- Inspection and sorting

This facility enhances students' understanding of industrial robotics and prepares them for automation-driven industries.

Wipro 3D Printer (Additive Manufacturing Lab)

Overview

The Wipro 3D Printer enables students to gain practical knowledge of Additive Manufacturing (AM) processes. It is used for rapid prototyping, product development, and research-based fabrication tasks.

Technology

- FDM (Fused Deposition Modelling) process
- Layer-by-layer material deposition
- CAD to prototype workflow integration
- Compatible with various thermoplastic filaments

Academic Utilization

- Rapid prototyping for student projects
- Mechanical component fabrication
- Design validation and testing
- Product development experimentation
- Research and innovation activities

Educational Benefits

- Enhances design thinking skills
- Improves understanding of manufacturing processes
- Supports interdisciplinary project development
- Encourages innovation and entrepreneurship

This facility supports Industry 4.0 concepts and modern manufacturing techniques.

Table-Top Robot (Educational Robotic Arm System)

Overview

The Table-Top Robot is an academic training system designed to introduce students to the fundamentals of robotics, including robot programming, motion control, and automation logic.

Technical Features

- Multi-axis robotic arm configuration
- Compact desktop design

- Programmable via controller/software interface
- Suitable for beginner and intermediate level experiments

Academic Applications

- Basic robot programming exercises
- Coordinate system understanding
- Forward and inverse kinematics experiments
- Path planning and motion simulation
- Automation sequence development

Skill Development

- Enhances logical thinking and problem-solving
- Provides practical exposure before handling industrial robots
- Builds foundational robotics knowledge

This system plays a vital role in strengthening the conceptual foundation of robotics among students.