

Robotics Laboratory – Siemens Centre of Excellence (SCoE)

About the Laboratory

The **Robotics Laboratory** is an advanced hands-on facility equipped with a **KUKA industrial robots** for training, experimentation, and research in **robotic based manufacturing and industrial automation**. The laboratory provides students and researchers with practical exposure to robot programming, process automation, welding, and material handling, bridging the gap between theoretical knowledge and real-world industrial applications to the UG and PG students alongside the research scholars.

Objectives:

The laboratory aims to develop competency in **industrial robot programming, robotic welding, automated manufacturing, and material handling**. It supports understanding of robot kinematics, trajectory planning, process parameter optimization, automation, and integration of robotic systems for flexible manufacturing.

Facilities:

The laboratory is equipped with a **KUKA industrial robotic system** integrated with facilities for **MIG welding, TIG welding, resistance spot welding, and material handling/pick-and-place operations**. The setup enables students to develop and execute robotic programs, control tool trajectories, study welding parameters, and perform automated handling of components. The laboratory can also support integration of sensors, fixtures, welding equipment, and other peripheral devices for advanced robotic applications.

Major Activities:

Major activities include **robot programming and simulation, robotic MIG/TIG and spot welding, automated pick-and-place and material handling, trajectory planning, welding parameter optimization, weld quality assessment, and robotic process automation**. The facility also supports undergraduate and postgraduate laboratory courses, student projects, faculty research, industry-oriented training, and development of advanced robotic manufacturing applications.

Overall, the laboratory serves as a platform for **experiential learning, applied research, and skill development in industrial robotics and automated manufacturing**, with particular emphasis on robotic welding and flexible manufacturing systems.

Faculty In-Charge

Dr. Dinesh W. Rathod

Technical Staff

Mr. Kamal

Mr. Surender

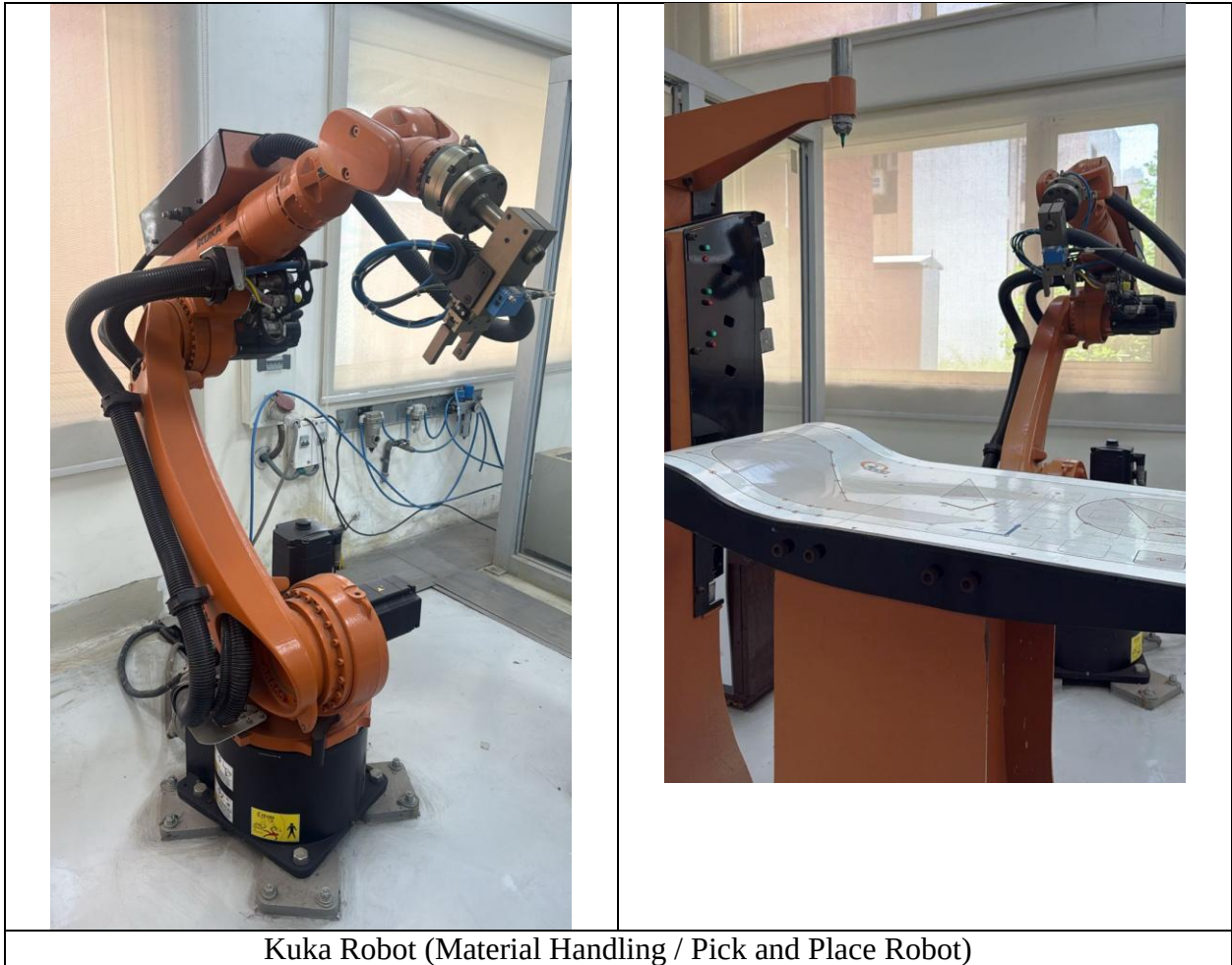
Laboratory Courses Conducted

S. No.	Course Code	Course Name	Programme (B.Tech./M.Tech./Ph.D.)
1	RAPC-313	Robot Programming and Control	B.Tech. R&A
2	RAPC326	CAD/CAM	B.Tech. R&A
3	RAPC413	Robot Operating System	B.Tech. R&A
4	MME1L04	Robotics Lab	M.Tech. Machine Design
5	MME2L01	Advanced Manufacturing Processes Lab	M.Tech. P&I
6	MEPC312	PT-II Lab	B.Tech. ME
7	PIPC206	PT-I Lab	B.Tech. PIE
8	PIPC216	PT-II Lab	B.Tech. PIE

Major Equipment/Software

S. No.	Name of Major Equipment/Software	Quantity	Utilization (B.Tech./M.Tech.)
1	KUKA Robot (MIG Welding)	01	B.Tech./M.Tech.
2	KUKA Robot (TIG Welding)	01	B.Tech./M.Tech.
3	KUKA Robot (Spot Welding)	01	B.Tech./M.Tech.
4	KUKA Robot (Material Handling)	01	B.Tech./M.Tech.

Laboratory Photographs





Kuka Robot (MIG Welding)



Kuka Robot (TIG Welding)



Kuka Robot (Resistance Spot Welding)