



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

COMPUTER AIDED MANUFACTURING LABORATORY

The world of manufacturing is seeking professionals who can help them produce products that are higher in quality and lower in cost. The **Computer Aided Manufacturing Lab** provides essential hands-on skills with knowledge in the area of Computer Aided Manufacturing. This course will introduce students to the operations associated with computer numerical controlled milling, drilling and turning. All of these processes will be controlled by codes written by the students. Students are expected to apply their knowledge of computer-aided engineering and manufacturing processes to the lab class exercises. Over the course of the semester, students will program numerically controlled machine tools to machine parts.

COURSE OBJECTIVES:

To impart knowledge on

1. NC programming for CNC turning and milling operation and execution.
2. Selection of tools for a machining operation.
3. Simulation and verification of machining processes.

COURSE OUTCOMES:

After completing the course the student will be able to

1. Know features and applications of CNC turning and machining centers.
2. Understand the CNC control in modern manufacturing system.
3. Prepare CNC Programming for different mechanical parts using G codes and M codes.
4. Implement the communication procedure for transmitting the CNC part program from an external computer to the control of the CNC machine tool.
5. Generate automated tool paths for a given engineering component.
6. Operate a modern industrial CNC machine tool for actual machining of simple and complex mechanical.

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

- ✓ CNC Vertical Machining Center
- ✓ CNC Turning Center
- ✓ CNC Trainer Milling Machine
- ✓ HMT CNC Train master Lathe
- ✓ CNC XL Turn Trainer Lathe
- ✓ CNC XL Turn Trainer Lathe
- ✓ CNC Trainer Milling Machine
- ✓ CNC Trainer Milling / Drilling Machine
- ✓ CNC Trainer Drilling Machine
- ✓ CNC XL Turn Trainer Lathe
- ✓ CNC Trainer Milling Machine
- ✓ Cylinder Bore Gauge
- ✓ Mitutoyo Outside Micro Meter
- ✓ Dial Caliper

Areas of research and Consultancy

1. Investigation of work vibration during CNC milling of alloy steels.
2. Investigation of Cutting temperature reduction through different cooling mediums during CNC milling of alloy steels.
3. Machinability studies on stainless steel during CNC milling.
4. Machinability studies on glass fiber, carbon fiber and natural fiber composites during CNC drilling.
5. Investigation of hard CNC milling with minimal cutting fluid application.
6. Analyze of surface roughness and cutting temperature during CNC turning of alloy steels.

Industry matching equipments

- ✓ CNC Milling Machine
- ✓ CNC Vertical Machining Center
- ✓ CNC Turning Center

Major Equipments



Fig. 1 CNC DRILLING MACHINE



Fig. 2 CNC VERTICAL MACHINING CENTRE



Fig. 3 CNC TURNING CENTRE



Fig. 4 CNC XL MILL TRAINER



Fig. 5 CNC XL TURN TRAINER LATHE



Fig. 6 CNC 4-AXIS MILLING / DRILLING TRAINER

Lab incharge:



Dr. RAJAKUMAR S. RAI., M.E., Ph.D., Assistant Professor

Lab Technician:



J.JONES ROBIN, B.E., Engineering Technician