

# CNC Laboratory

## **Objectives:**

By undergoing this lab the students will learn to use the CNC machines efficiently for manufacturing desired products and knowledge of programming and use of CNC tooling. Appreciate the importance of CNC lathe and CNC Milling machines. Understand the codes (G-code and M-Code) used in CNC machines for programming. Develop Programming skills and create a component for required drawing, Simulate the prepared part programme using available simulation software's. And prepare the parts on CNC.

## **Activities conducted:**

### **PART A. CNC turning centre part programming Students would:**

- a. Sketch each turning part with dimensions.
- b. Prepare CNC part programme using G and M codes with ISO format.
- c. Show various zeros and tool path on part sketch with color codes and dimensions.
- d. Simulate the prepared part programme using available simulation software's.
- e. Prepare the parts on CNC.

#### **Experiments under CNC Turning:**

1. Develop a part program for step turning and simulate.
2. Develop a part program for taper turning and simulate.
3. Develop a part program for circular interpolation and simulate.
4. Develop a part program for multiple turning operations and simulate.
5. Develop a part program for thread cutting, grooving and simulate.
6. Develop a part program for internal drills, boring and simulate.

### **PART- B. CNC machining centre part programming Students would:**

- a. Sketch each part with dimensions.
- b. Prepare CNC part programme using G and M codes with ISO format.
- c. Show various zeros and tool path on part sketch with color codes and dimensions.
- d. Simulate the prepared part programme using available simulation software's.
- e. Prepare the parts on CNC.

#### **Experiments under CNC Milling:**

1. Develop a part program for grooving and simulate on CNC Milling
2. Develop a part program for drilling (canned cycle) and simulate
3. Develop a part program for mirroring with subroutines and simulate
4. Develop a part program for rectangular and circular pocketing and simulate

### **PART-C. Wire cut EDM and CMM:**

These machines provide innovative technical solutions to industry and institution and provide technical support for PG and UG students for research projects that help in developing hands on innovative curriculum.

#### **Main equipments:**

1. CNC Turning Centre (Stallion 100Su)
2. CNC Machining Centre (VMC-400M)
3. CNC Wire Cut (Sprint Cut)
4. CNC Train Master (HMT: T-70 Pc)
5. CNC Trainer Mill (MTAB: XL-Mill)
6. Coordinate Measuring Machine

#### **Photographs:**



CNC Turning Centre (Stallion 100Su)



CNC Trainer Mill (MTAB: XL-Mill)



CNC Machining Centre (VMC-400M)



CNC Wire Cut (Sprint Cut)



CNC Wire Cut (Sprint Cut)