

METU

FACULTY OF ARCHITECTURE

3 AXIS CNC MILLING MACHINE MANUAL

Our faculty provides two 3 axis CNC milling machines for the studies of the students and academic staff. Before preparing the files for the 3 Axes CNC milling process, all users should read the guide carefully and make a reservation for the CNC milling machine at least two days before the planned machining date . During the peak times of the semester, the reservations should be made at least a week before.

You can prepare your files for the CNC milling process by using any CAD software as long as files are saved in STL format.

In order to prepare your digital models for the 3 axes CNC milling process, you should organize your files by considering the following information.

The parts should be scaled to the actual size of the model (1 unit=1 mm).

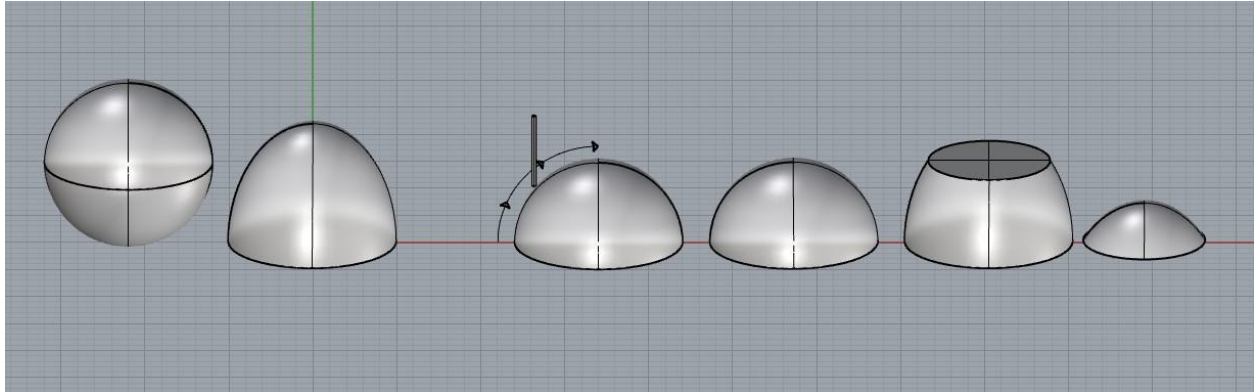
The size of the parts must not exceed the processing capacity of the machines and the available materials.

Each of our milling machines has a maximum of 120 cm to a 180 cm production area, however available material size determines the size of the part or the batch to be processed. The most common extruded polystyrene foam (XPS) size is 60cm x 120cm and available in different thicknesses.

The maximum thickness of the part to be produced may vary according to the machining to be used, the length of the mill tip and properties of the material.

In a 3 axis milling machine, the spindle moves on the X, Y and Z axis. Therefore the digital models of the parts should be arranged according to the working principle of machines.

If you would like to produce a spherical form, you should divide it into parts and locate the parts on the basis of the moving direction of the spindle. In certain cases, you may need to manually process some reverse angle details on your models.



If the height of your part exceeds the material thickness, you must slice your part and place each slice on the machining plane.

All parts should be adjusted to the max part size of the machine and modeled as closed forms. Before saving your file please be aware that all the parts are positioned on the XY plane.

When placing your parts on the working plane, you must leave a distance of at least 8mm between the parts.

The milling machine processes the inside of the rectangular area determined by the outermost boundaries of the parts, hence you should locate all the parts so that they occupy a minimum area. In this way you may decrease the processing time.

The files should be labeled in the following way.

Course code_Name
Arch401_AyseKorkmaz

Please send your files to foamorl@metu.edu.tr before your appointment

Safety

Do not leave the CNC milling machine unattended while it is in operation.

In case of any problem during the milling process;

Please stop the process by using PAUSE button on the interface of the CNC control software,

Notify the lab staff.

In case of emergency;

Turn of the CNC milling machine by using “EMERGENCY” button on the front panel of the machine,

Notify the lab staff.

Cleaning

All users are expected;

To clean the working table and rails of the CNC milling machine and its environment,

To throw away their trash into the appropriate recycling bins.

If you have any questions please contact the model making workshop staff.