3D Modeling with NX 12

Some Helpful Tips of Sketching and Modeling

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In Last Class

NX 12 Gateway
- Menus, Ribbon bar, resource bar, command finder, etc.

Mouse Functionality
- MB1, MB2, MB3

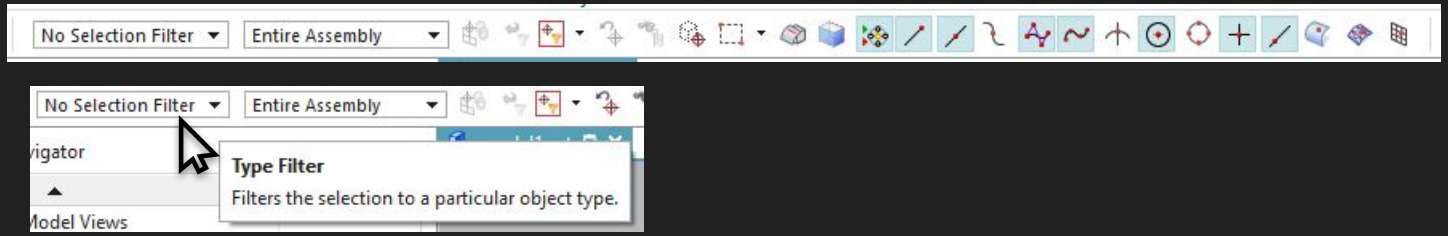
Coordinate Systems

Form Features
- Reference (Datum planes etc.)
- Remove (Hole etc.)
- Swept (Extrusion, Revolve etc.)
- Primitives (Cylinder, Cone etc.)

Boolean Operation

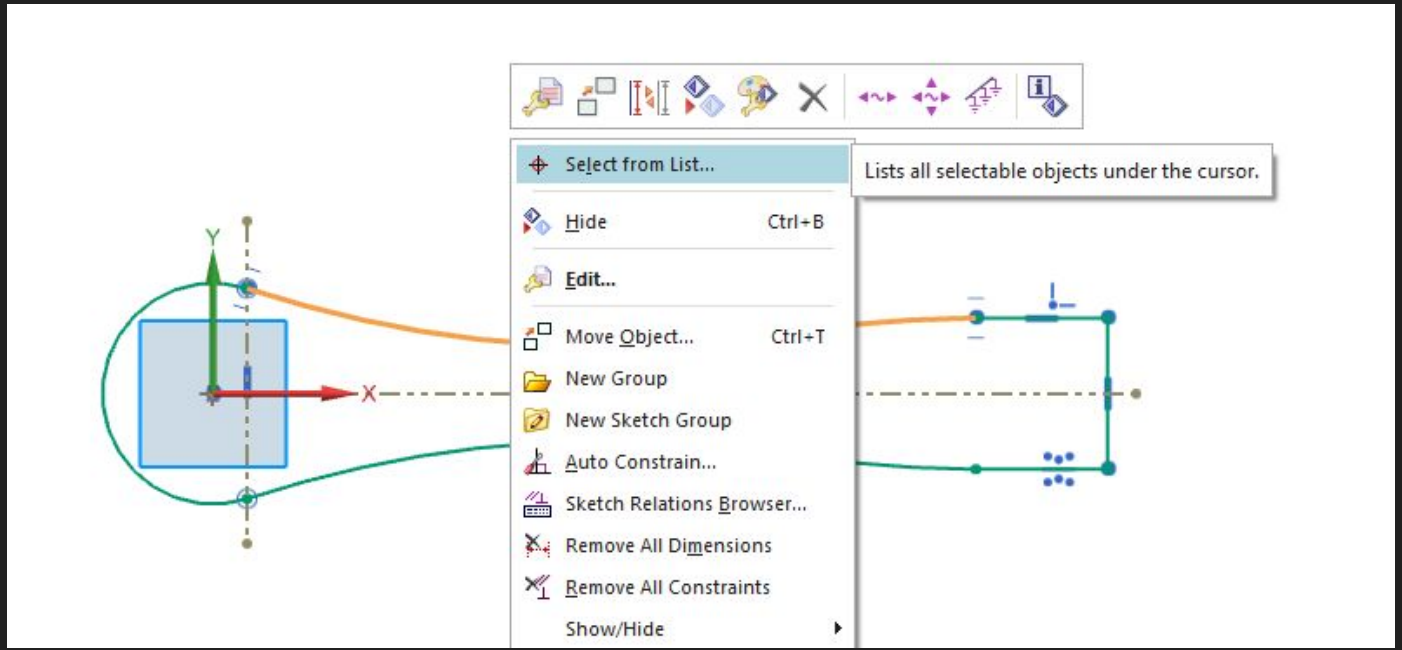
Use Various Selection Filters and Options

There are different selection filters, such as Type Filter and Selection Scope, and a series of options to help you select the target object.

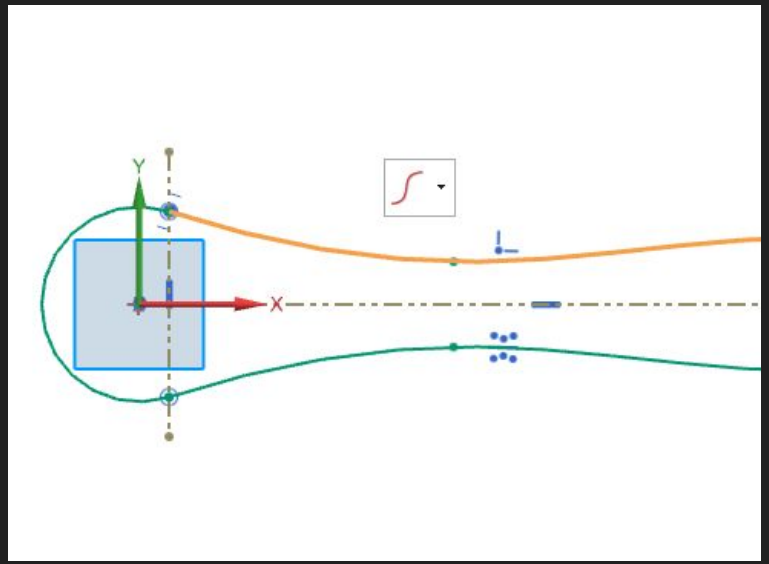


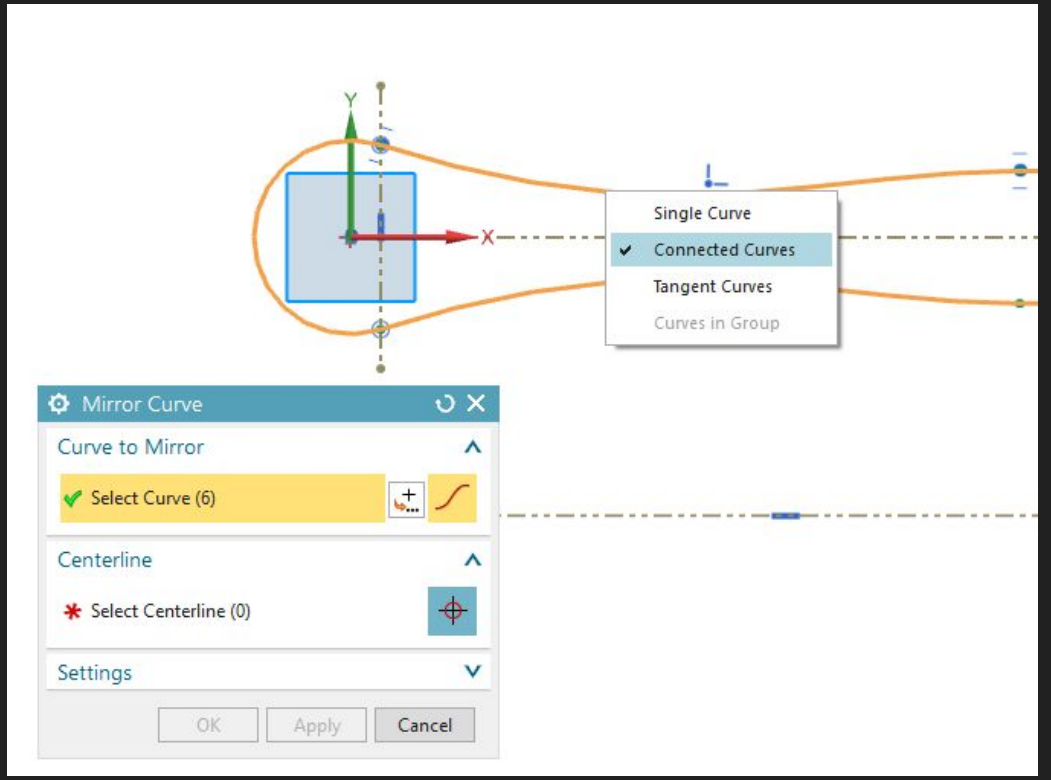
Select from List

Right-click on an object



Selection Options



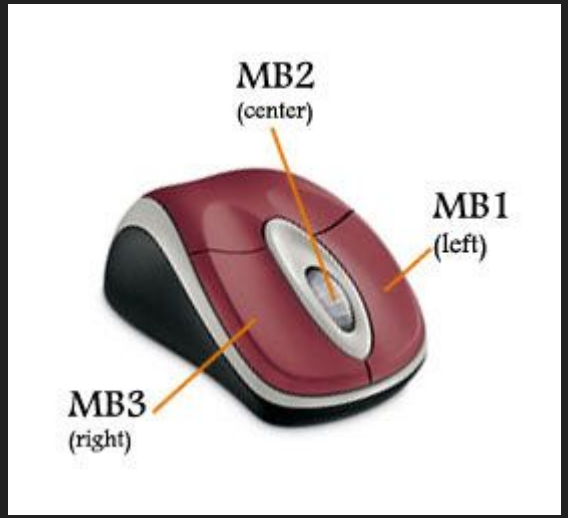


Pay Attention to Some ‘Hidden’ Options

Left click on an object

Right click on an object

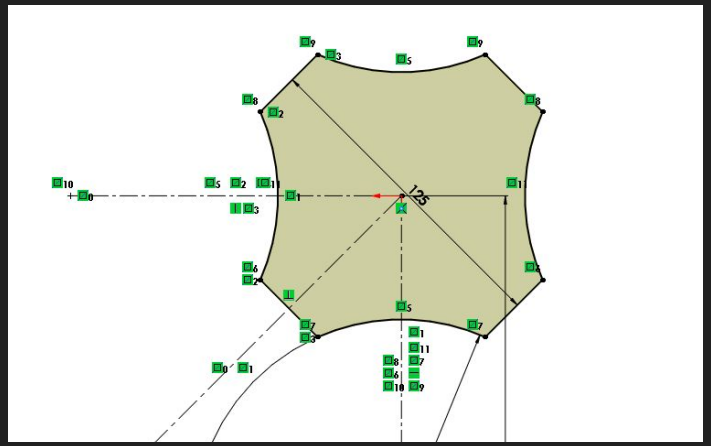
Pressing MB3

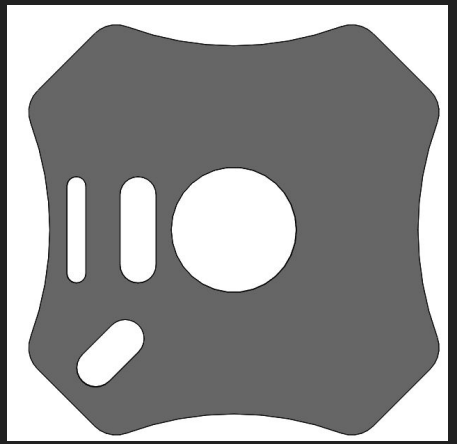


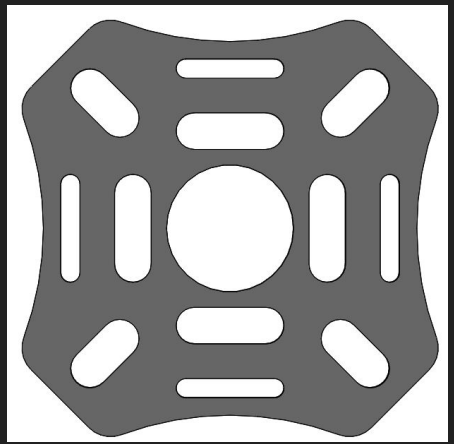
Use Mirror/Pattern to Make Life Easier.

In the 2D sketch phase

In the 3D modeling phase





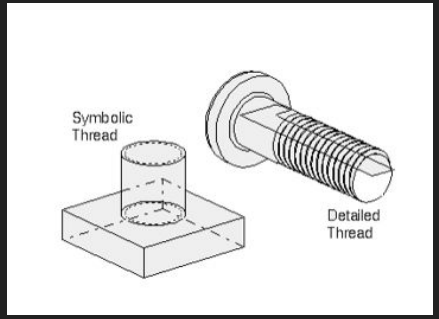


Some Useful Features

Threading

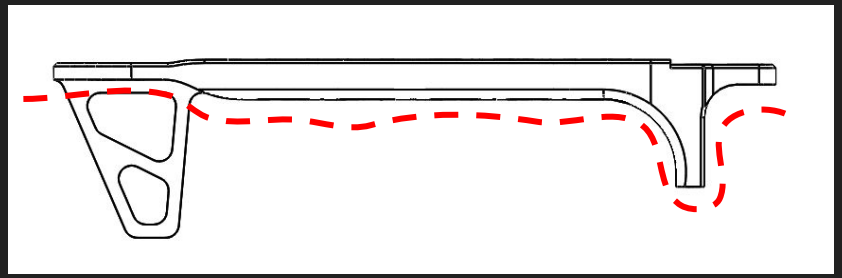
Can only be created on cylindrical face

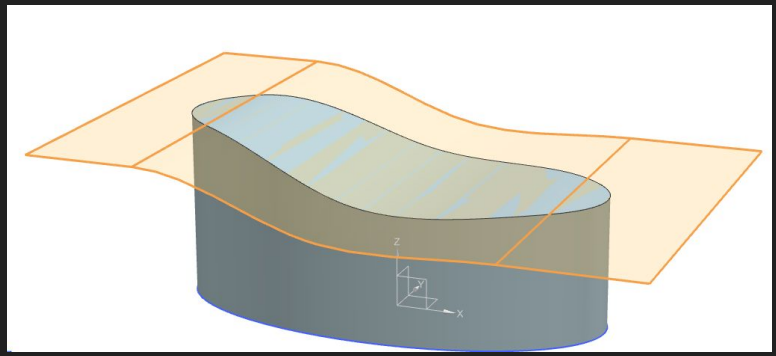
Symbolic or detailed



Trim Body

Solid body can be trimmed using a datum plane or a sheet body





Sketch

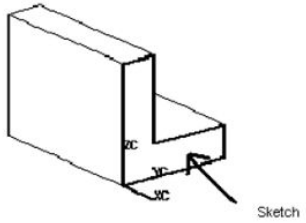
A sketch is a named set of 2D curves and points located on a specified plane or path.

The advantages of sketching over using primitives or other form features are:
The curves used to create the profile outline are very flexible and can be used to model unusual shapes;
The curves are parametric hence, associative and can be easily changed or removed;
If the sketch plane is changed, the sketch will be changed accordingly;
Sketches can be edited very quickly and easily.

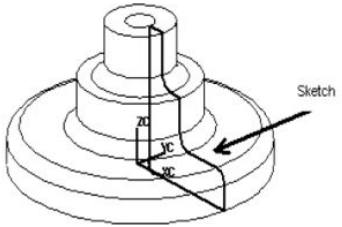
Sketch

Sketch is the basic framework for 3D modeling.

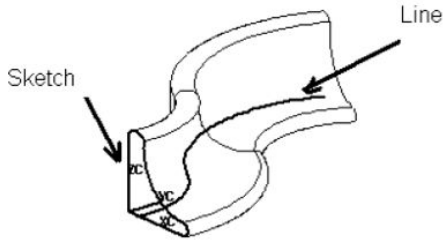
A sketch can be extruded



A sketch can be revolved



A sketch can be swept along a guide (line)

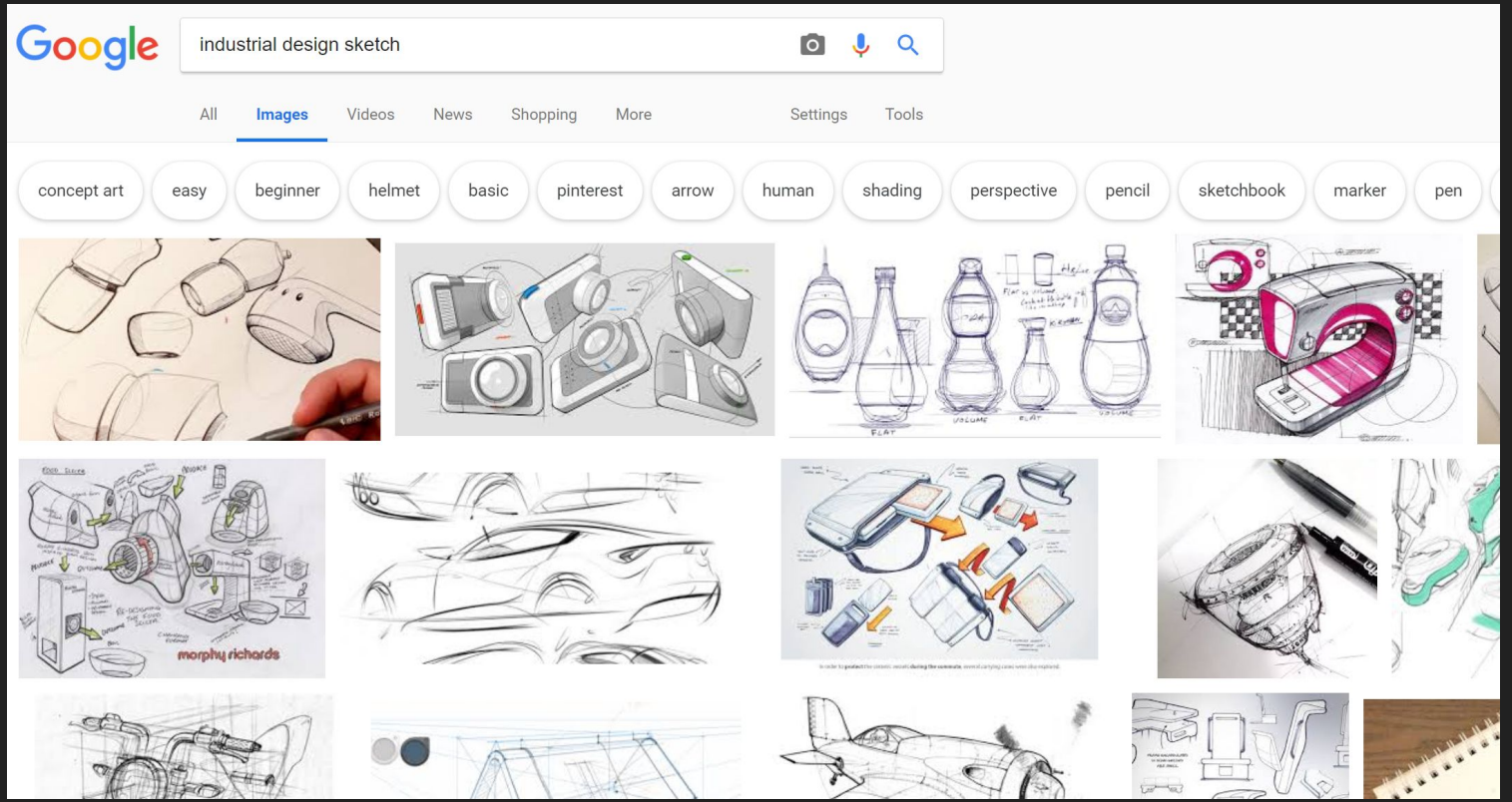


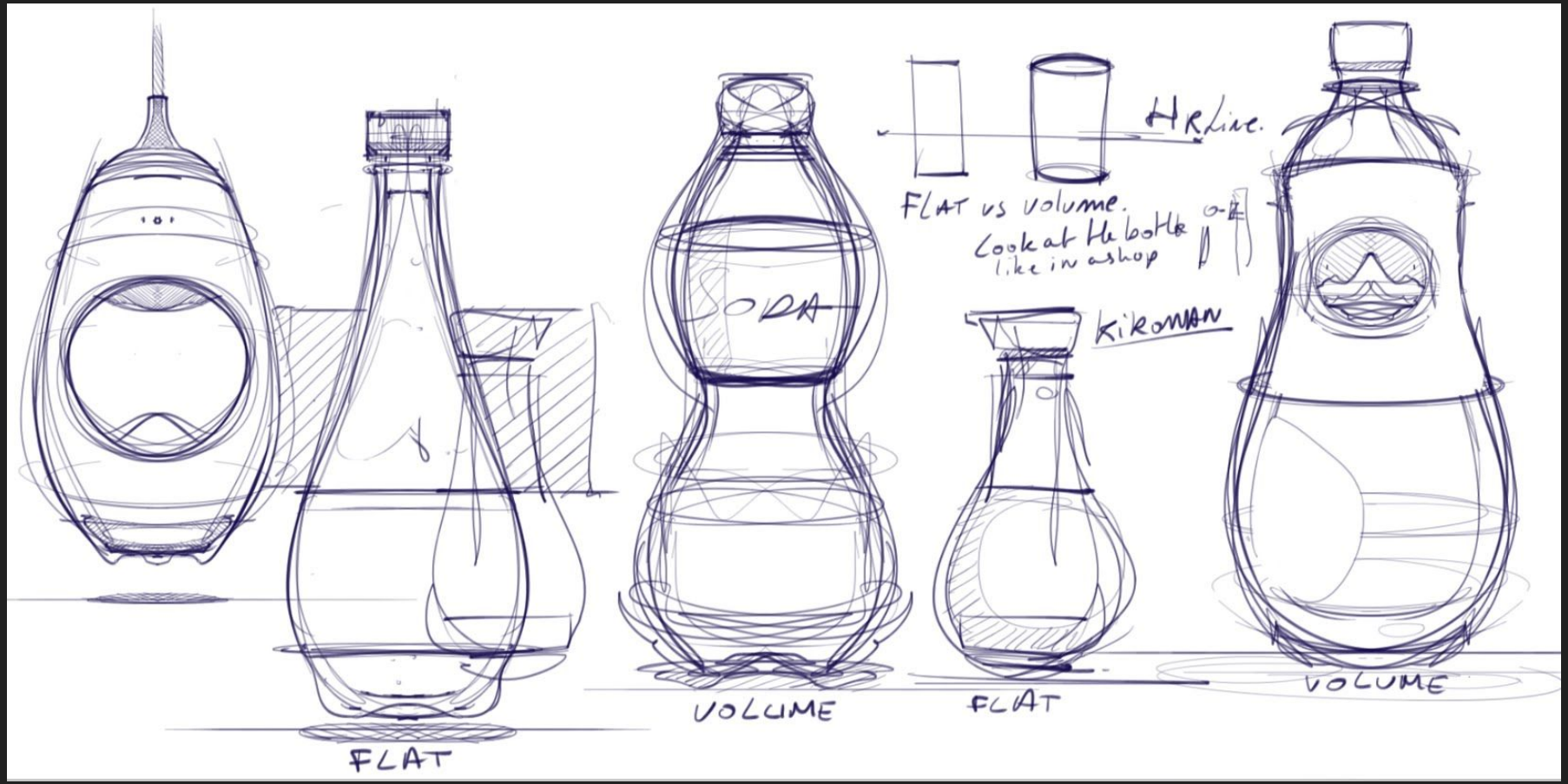
Constraints

Dimensional Constraints:
These dimensions can be **linear, radial, angular** etc. You can edit the dimensional values at anytime during sketching by double-clicking on the dimension.

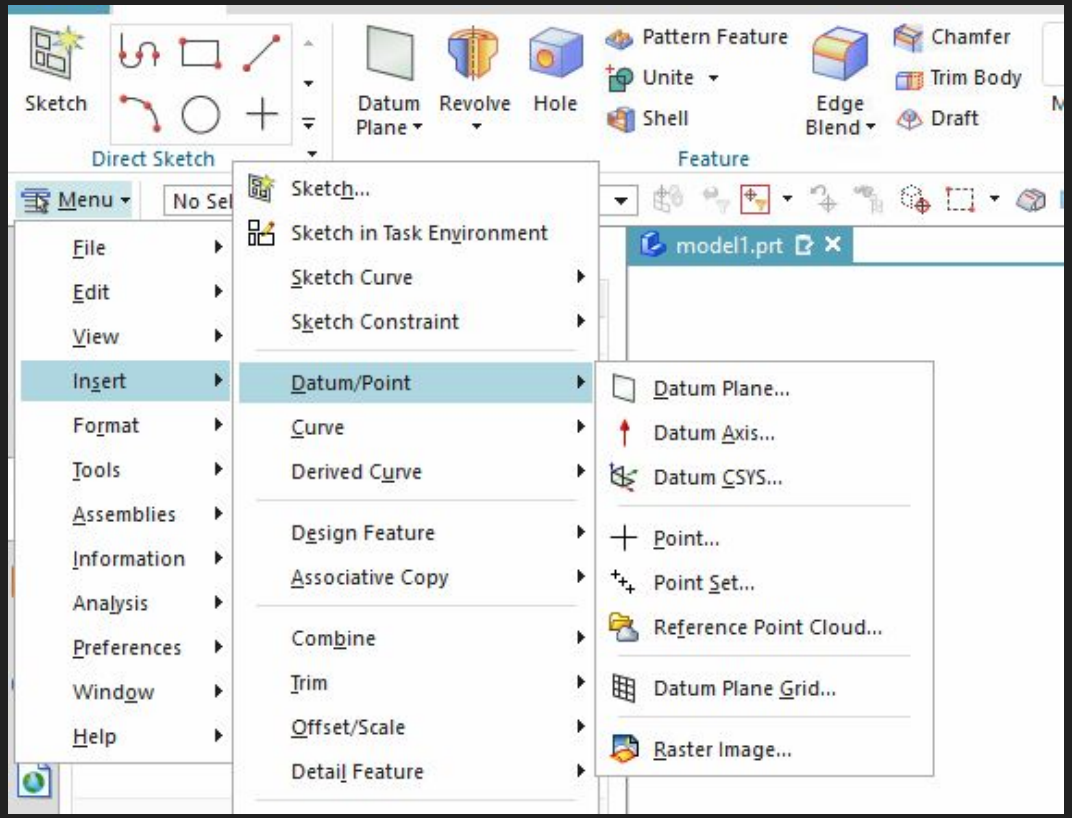
Geometric Constraints:
They include **parallel, perpendicular, collinear, concentric, horizontal, vertical, equal length**, etc. The software has the capability to find the set of possible constraints for the selected entities.

What if We Receive the Design from a Industrial Designer?

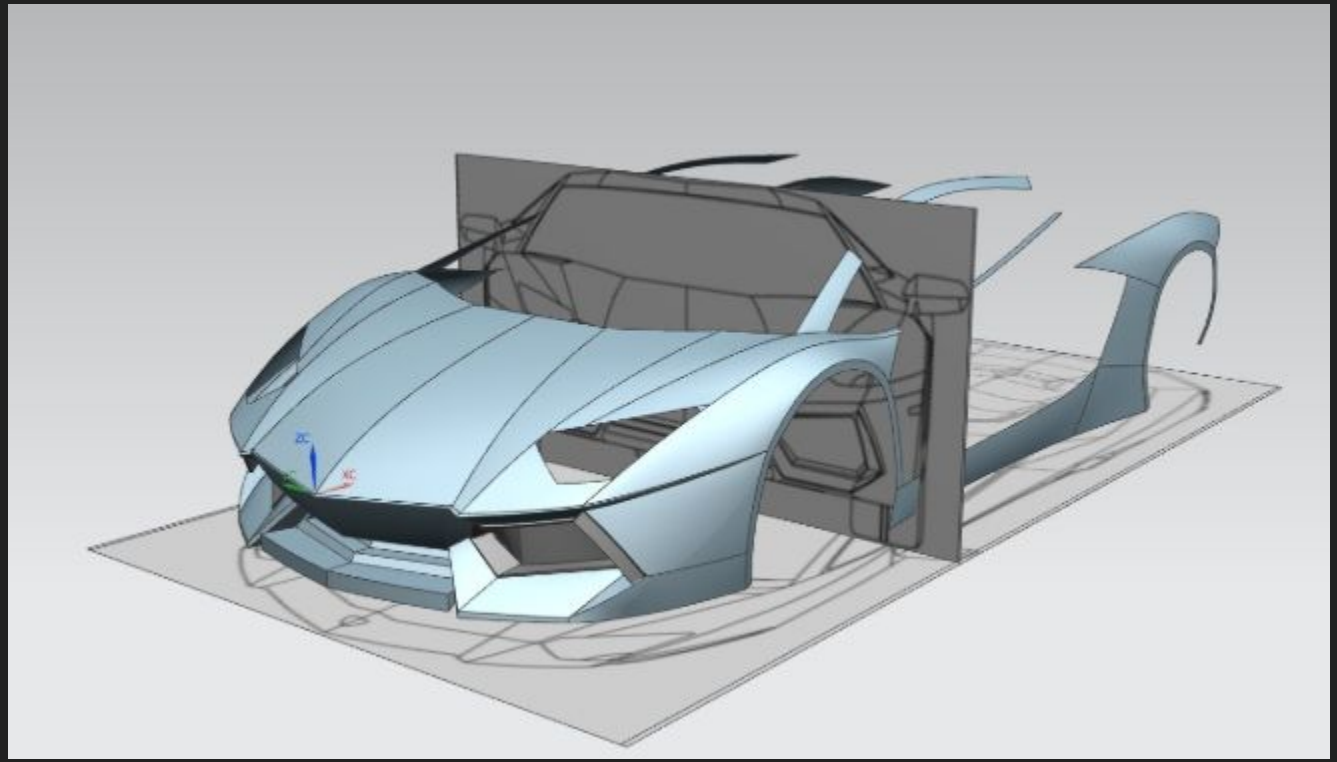



HR line.
FLAT vs volume.
Look at the bottle like in a shop
O-K
SODA
Kikoman
FLAT
VOLUME
FLAT
VOLUME

Raster Image

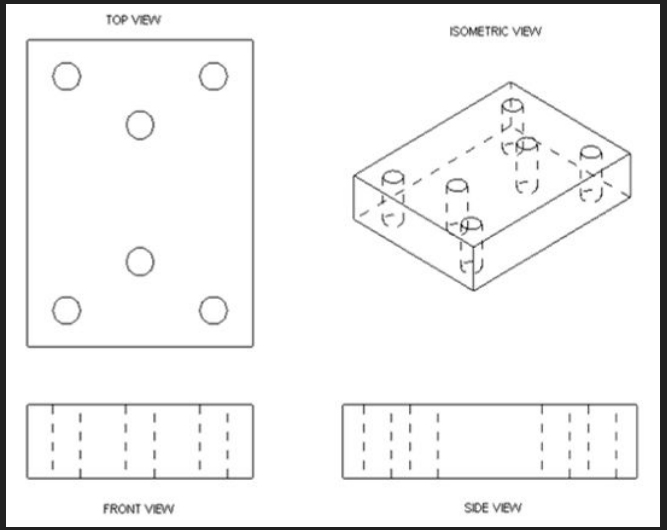


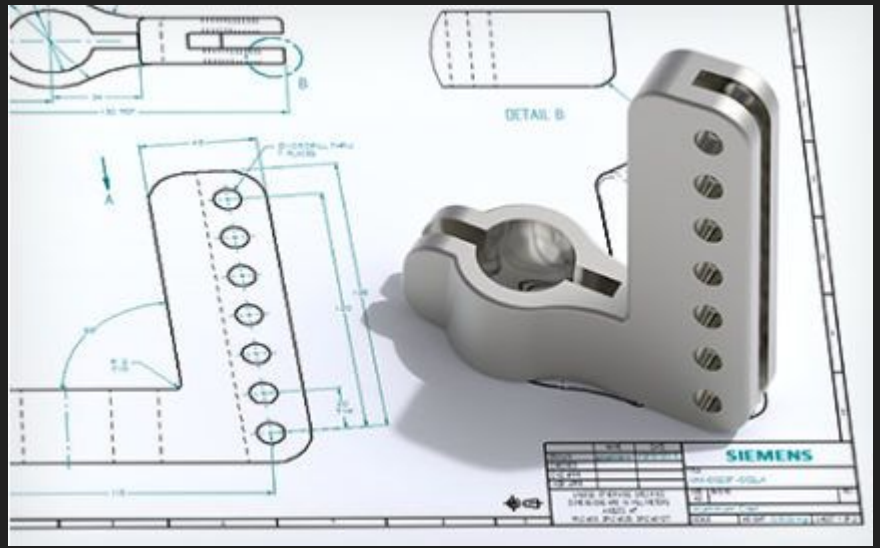
Raster Image



Drafting

The Drafting application is based on creating views from an existing solid model Drafting makes it easy to quickly create a 2D drawing with orthographic views, section views, imported view, auxiliary views, dimensions and other annotations.



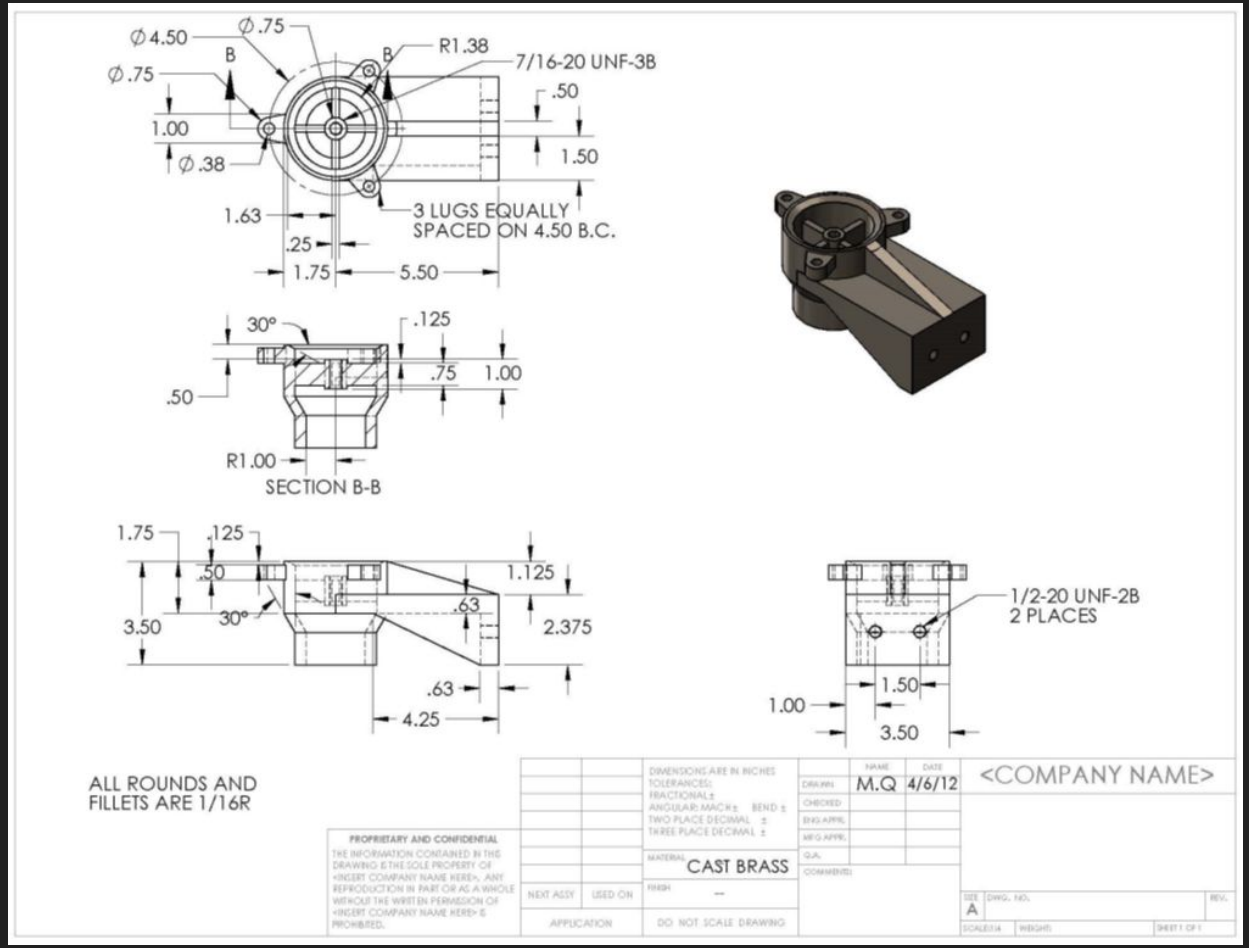


Drafting

Some of the useful features of Drafting application are:

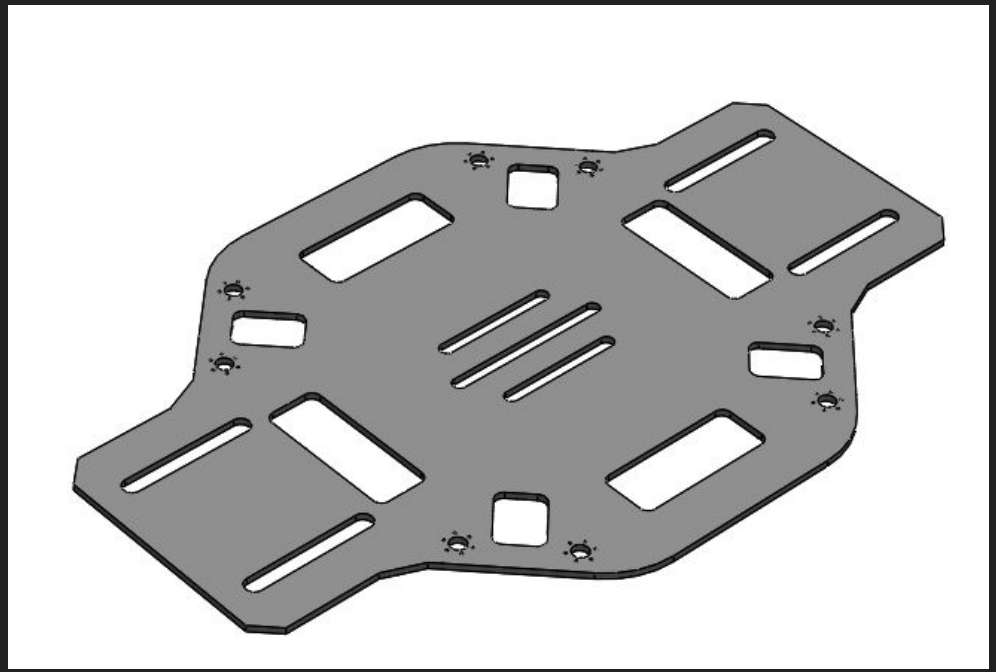
After you choose the first view, other orthographic views can be added and aligned easily;
Each view is associated directly with the solid. Thus, when the solid is changed, the drawing gets updated directly including the views and dimensions;
Drafting annotations (dimensions, labels, and symbols with leaders) are placed directly on the drawing and are also updated automatically when the solid is changed

Drafting


Ø4.50
Ø.75
B
Ø.75
R1.38
7/16-20 UNF-3B
.50
1.00
Ø.38
1.50
1.63
3 LUGS EQUALLY
SPACED ON 4.50 B.C.
.25
1.75
5.50
30°
.125
.50
.75
1.00
R1.00
SECTION B-B
1.75
.125
.50
1.125
30°
.63
3.50
2.375
.63
4.25
1/2-20 UNF-2B
2 PLACES
1.50
1.00
3.50
ALL ROUNDS AND
FILLETS ARE 1/16R
DIMENSIONS ARE IN INCHES
TOLERANCES:
FRACTIONAL ±
ANGULAR: MACH ± BEND ±
TWO PLACE DECIMAL ±
THREE PLACE DECIMAL ±
NAME
DATE
DRAWN
M.Q
4/6/12
CHECKED
ENG APPR.
MFG APPR.
QA
COMMENTS:
<COMPANY NAME>
MATERIAL
CAST BRASS
FINISH

NEXT ASSY
USED ON
APPLICATION
DO NOT SCALE DRAWING
SIZE
A
DWG. NO.
REV.
SCALE:1:4
WEIGHT:
SHEET 1 OF 1
PROPRIETARY AND CONFIDENTIAL
THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF <INSERT COMPANY NAME HERE>. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF <INSERT COMPANY NAME HERE> IS PROHIBITED.

How to Model it in 2 Minutes?

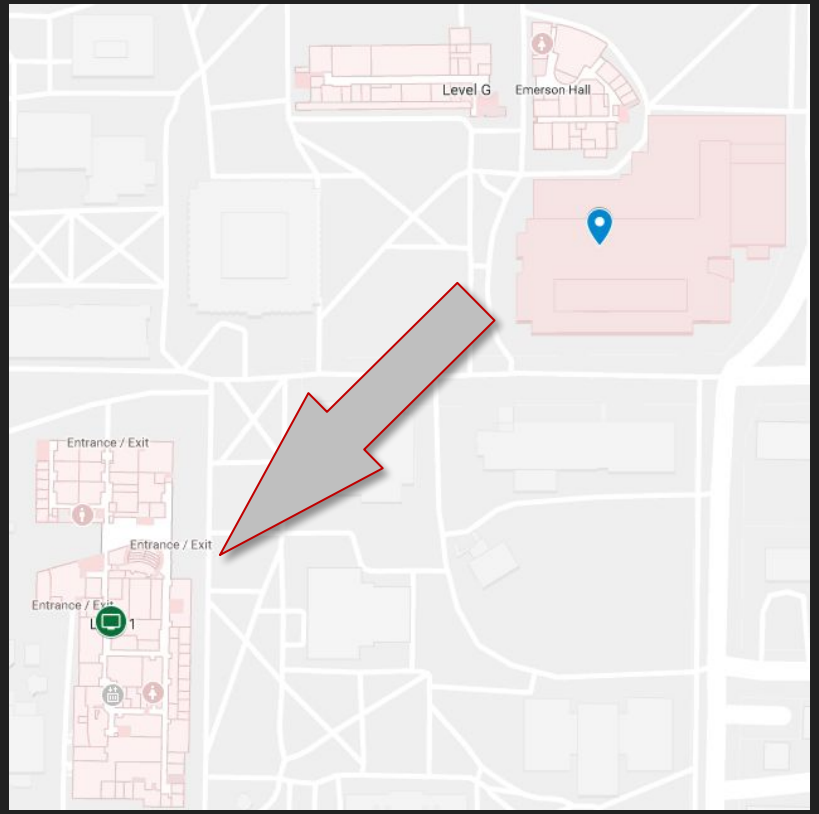


Self Practice

Due: Sep. 14

Project 1 Task 1: https://me5763.github.io/lab/pages/project-1.html

For on-campus students: Toomey Hall 200. See you there!



Toomey Hall 200

CLC
COMPUTER LEARNING CENTER

For Distance Students

There are CLC machines available for you to access software remotely. The setup instructions are provided on Canvas.

Here's how you can speed up your NX 12 on the virtual machine: https://me5763.github.io/lab/pages/speed-up-nx.html