



## Design and 3D print a business card

### Abstract

In this first assignment, you will design a name card/tag using Fusion 360 and 3D printing it with printers in the Sandbox Makerspace.

### Description

The name card will be in a rectangle shape with 4 through holes (See Figure 1).

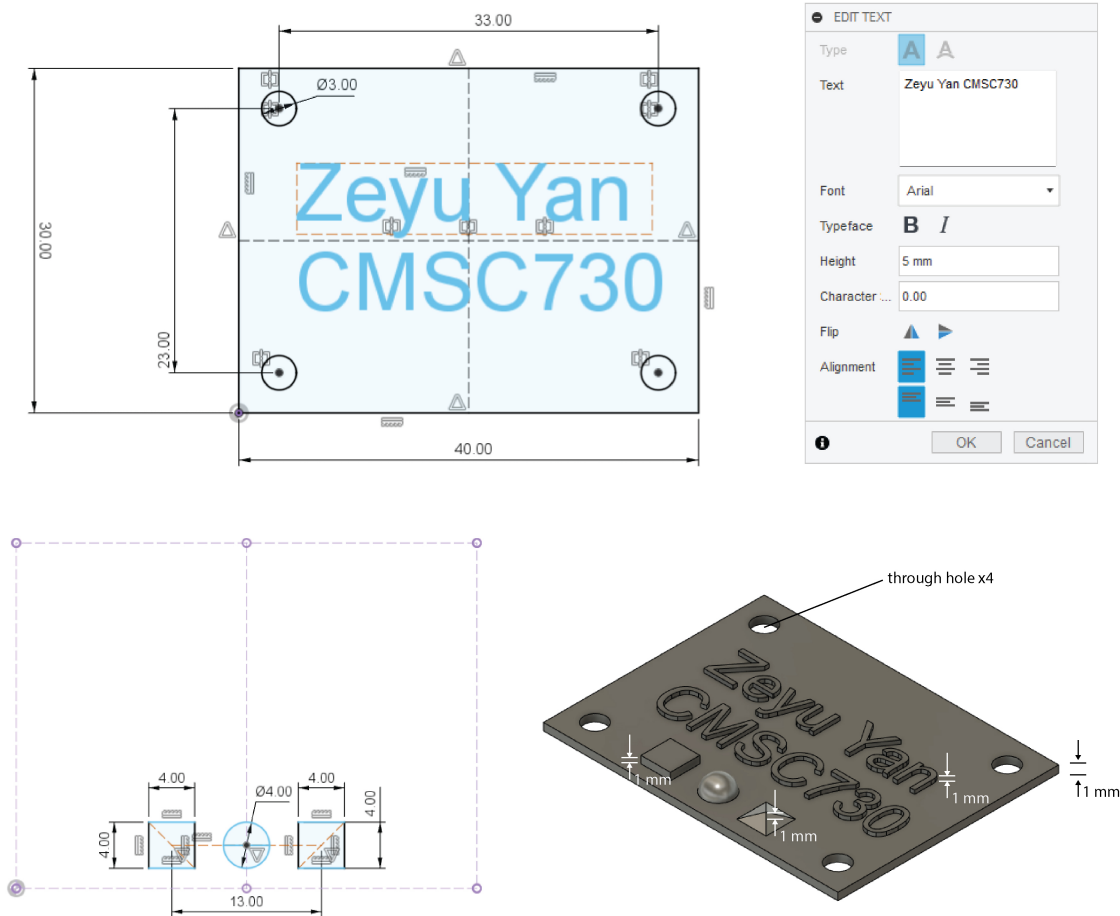


Figure 1: Name card dimensions.

## Design spec:

- The overall **dimension and location** of the name card is labeled in Figure 1.
- **Through holes are symmetric against each other according to the center of the rectangle.**
- your name is extruded up on top of the name card (our example includes “CMSC730” to block more space for longer names — you don’t need to include “CMSC730” in your design). The text font is set to **5mm tall**, and the **extrusion is 1mm**.
- 3 additional features are added to the bottom of your name: **1 quadrangular prism** (4mm by 4mm base, 1mm tall); **1 semi-sphere (4mm diameter)**; **1 pyramid (4mm by 4mm base, 1mm tall)**. The semi-sphere should be located **at the center of the “name card” left to right**, and the quadrangular prism and the pyramid are located **symmetrically about the center-line** of the name card left to right.
- Once you finished the 3D modeling, you will generate an STL file for printing. If you use the Ultimaker printer in the Sandbox, you will likely to use a slicing software called **Cura**. Please slice your model with 0.2mm layer thickness to minimize printing time (since precision is not top priority of this assignment).

**Sandbox Training Module:** Sandbox has a well-documented [wiki page](#) where you should be able to locate all the information you need. For what we need in this assignment, you should sign-up for the [Sandbox Training course](#). There are a suite of very useful training modules, *e.g.*, training on the Weller WES-51 soldering station or the Shaper Origin handheld CNC router. Feel free to complete as many as you want. For assignment 1, we require you to complete the module named “Ultimaker S5 3D Printer” (See Figure 2).

▼ Ultimaker S5 3D Printer		Prerequisites: Introduction	Complete All Items	🔒
📄	Ultimaker S5 3D Printer Introduction View		<input type="radio"/>	
📄	3D Printing Toolchain Background View		<input type="radio"/>	
📄	Ultimaker S5 Identification Mark done		<input type="radio"/>	
📄	FDM 3D Printer Safety & Standard Operating Procedure Mark done		<input type="radio"/>	
📄	Ultimaker 3D Printer Knowledge Review 6 pts   Score at least 6.0		<input type="radio"/>	
📄	3D Print Preparation Assignment 1 pts   Submit		<input type="radio"/>	
📄	End Of Training Module			

Figure 2: You will need to complete the Ultimaker training module to use the printer in Sandbox.

## Delivery

There are four items to be included in the submission.

- Fusion 360 model: “.f3d” file
- Mesh model: “.stl” file

- Sliced machine operation code: “.ufp” file for ultimaker, or “.gcode” file if your model is printed with other 3D printers
- Sandbox training module screenshot: the screenshot should indicate that you finished training for Ultimaker S5 (we will double check in the sandbox elms)
- 3D printed part: Submit in person. **Bring your printed model to IRB0102** before the deadline.

\*Please zip all files (of course, except for the print3d model) into a “.zip” file and name it in the following format: “firstName\_lastName\_assignment1.zip”. The file should be uploaded to ELMS under “Assignment 1”.

## **Due Date**

**Wed Sep 11th, 11:59 PM EST.**

Note that the weekly assignment is usually due at midnight on the Wed of the upcoming week. For assignment 1, you will have two weeks to accomplish it, as you will need time to go through the Sandbox training and to print the actual design.