# Group Project: mechanical controller

Student Name: Nathan Saccary Week 2: March 14th - 27th

## Thursday, March 14th ,2019

5 pm,

I split the whole model into two parts, a top cover and the rest of the body.

## Friday, March 15th ,2019

9 am,

I measured multiple dimensions on the clay model to better scale the fusion 360 model to.

4 pm,

I reverted the split body I did yesterday to scale the model easier. The model has slightly more length than the clay model but that could be useful.

## Saturday, March 16th ,2019

5 pm,

Re-split the body and attempted to hollow out both pieces. The top cover was able to hollow just fine with a wall thickness of 5 mm, but the body would only take 1 mm. (way to small) Fusion would freeze and revert the changes every time I went past 1 mm.

7 pm,

I tried changing some minor stress points in the model by slightly re-sculpting the grips of the controller to make them a little bit wider so the hollow could possibly go past 1 mm. No dice, the body still will not take the hollow past 1 mm.

## Sunday, March 17th ,2019

Watched a [video](https://www.youtube.com/watch?v=HcqH7pc1CbA&list=LLMGeknJkQkQqOXXELL2PM5A) on fusion 360s meshmixer and how it helps with making 3d prints.

## Monday, March 18th - Sunday, March 24th ,2019

Over the study week I experimented with ways to hollow the model easier. I ended up creating multiple patch bodies based on projected sketches from the model that intersected each other at certain points so I could you the boundary fill tool to manually solidify the grips as well as create a good thickness for the walls of the controller. I also used patch bodies to create a flat layer inside the body of the controller where the switches and analog sticks + Arduino board can sit.

Since the button's layout is not finalized yet I decided to create a “shell” version of the top cover that can be used to visualize how much room we have inside the body for the components. It was a bit tricky to create this hole due to the way that the cover was split from the body in the first place. I had to use both a projected sketch of the face of the cover as well as the open area inside the body. I layed both sketches together and then created another patch body that went around the inner most points of the combined sketch.

I had to do a minor change to the height of the body due to the area inside of the body not having enough clearance for the mechanical switches. I only had 14 mm to work with inside the body while the key switches are 16 mm in height. I brought the model back into the sculpt view and edited the center point of the controller right at the bottom so the midpoint of the base was not as steep thus giving me more room height wise to play with inside of the body (14 mm to 20 mm).

## Monday, March 25th ,2019

8:30 am – 12:30 am,

Due to complications with the lab computers at school either having administrative rights restrictions and/or being 32-bit, I was unable to download and use meshmixer (the tool I was going to use to create the supports for the model). This halted my plans for the day as I wanted to start printing the controller today.

2 pm,

Two stl files for the top cover and the body of the controller have be created with supports for the body.

## Tuesday, March 26th ,2019

10 am,

The top cover of the controller is now printing.

11:30 am,

The top cover has finished printing with negligible issues. This will be used in the time being to see if we have enough leeway for all the switches as well as the joysticks.

12 am,

The body of the controller is now printing. (estimated time of 35 hours)

## Wednesday, March 27th ,2019

8:30 am,

Yesterday's 3d print went bad. The plastic was flaking off and pulling off from the printing tray.

10 am,

I created a new stl file with thicker and less supports as well as a raft under the print to prevent the model from raising.

1 pm,

The revised model is now being printed.

3:30 pm,

The 3d printer got jammed and the print was reset.