

I spent the majority of this week working in the machine shop, learning how to use the milling machines from Mr. L with Clark Barayuga, Grace Kallberg, and Jacklyn Whealan.

Before we could begin to use the milling machines Clark and I replaced all of the vice jaws, and made the vice's reference edges straight within  $5/1000$  of an inch along the length of the vice. We did this by repeatedly measuring the change in the Y-Axis while moving a Haimer 3D-Sensor along the X-Axis of the reference edge, then adjusting the vice with a mallet until the change in the Y-Axis was within our margin of error.



Image of Clark teaching me how to replace the vice jaws

After all of the machines were properly calibrated we started to learn how to use the manual milling machine. In order to learn how to use the milling machine we started making a turner's cube. Using the manual milling machine I started facing the cube, and grew familiar with the coordinate system used by milling machines.



Image of me using the manual milling machine to face cube

After using the manual milling machine Mr. L started to teach us how to use the CNC Milling Machines without CAM (Computer Aided Machining), we will learn CAM at a later date. I encountered some difficulties using the ATC (Automatic Tool Changer) at first, but learned how to fix some of the common issues with it.



Image of Grace, Jackie, and I learning how to use the automatic milling machine  
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