Heidi Peterson
ME 203: Design and Manufacturing
December 14, 2016

Reflections Essay

ME 203 was everything that I hoped and feared it would be: an opportunity to learn how to work with metal, build an incredible project, get back in a shop, work with my hands, and of course, eliminate all my free time and sleep. It also turned out to be one of my favorite classes at Stanford, mainly because it felt so different from any class I had taken up until that point. Any time I was in the PRL or working on a 203 project, I felt like the work I was doing was more "real" than projects for other classes. Of course, you learn from making mistakes on problem sets and exams, but 203 takes it to a whole other level. "Problem Solving" might be a more accurate title for the class, because I felt like I was just trying to solve one problem after another, and then solving the new problems created by my solutions to the previous problems. What I loved most were the times when I could be creative in finding a solution, such as strengthening my welded corners by machining steel "L's" to fit inside the two pieces of tubing, and then when I used two vices to hold the piece of steel that I made the "L's" out of.

Coming into 203, I had gained a fair amount of woodworking experience through my dad's woodshop and my high school, but I had worked very minimally with metal. Looking back, I can't believe how much I learned this quarter. I learned how to machine different kinds of metal on the mill, sand cast, turn on the lathe (very different from what I expected given my experience on the wood lathe – I was expecting handheld tools, and couldn't figure out how I was expected to get metal surfaces so smooth), TIG weld (I also learned that I hate TIG – at least with 3/8" aluminum tubing), sand and finish metal, use fasteners, order from McMaster (a critical skill), and more. In my life, there are a few concepts/technologies that are a complete mystery to me and that I don't think I will ever truly understand. For example: CDs (how do you put someone's voice on a piece of plastic?). Another one used to be how you create threads in metal or wood, so although I'm still a little fuzzy on the details, the most mind-blowing thing that I learned in 203 was how to tap holes and thread rods. I also learned a few big picture lessons, such as how to best manage my time, wake up early, and learn from everyone around you.

If I could give advice to incoming students it would be this: when working on your project, things really will take four times as long as you think they would – maybe not the process itself, but it will take three times as long to set up the process, fix the mistakes you make, and solve the unexpected and therefore unavoidable problems that will arise. No, you cannot do that last pass and clean the mill in ten minutes. No, there is no point in scrubbing your hands – you will be back in the PRL within hours. Eventually, your friends will stop asking you where you are. Wrap your project thoroughly early on or you'll be kicking yourself later when you're sanding. Measure fifteen times, cut once. Learn how to put your hair up into a comfortable bun. Don't scratch your glasses. Be nice to the TAs – they're awesome. Take pictures as you go and upload them to Box. Choose a project within scope. Have fun!

Thank you so much for an amazing quarter!