Autodesk Inventor Design Challenge

For this challenge, I decided to build a robot that could help a chemist. What do you use when you are running experiments with dangerous chemicals? You need a ChemBot 1000. The ChemBot 1000 is a remotely operated (autonomous and human control) robot that can perform a variety of experiments that would otherwise be dangerous to humans.

The ChemBot is equipped with a balance to measure the mass of a quantity. A substance is placed on the tray, which pulls on the lever. A latex tube offers resistance to the lever. A potentiometer measures the angle the lever is tilted. This device can be calibrated using known masses. The ChemBot is also equipped with a ring stand that will hold rings, burets, beakers, etc. There is a plate on the bottom for a Bunsen burner. In the far corner, there is a centrifuge for sorting substances. There is also a claw to manipulate the substances. In the back, there is a rack to store chemicals, as well as the microcontroller, an LCD display, and a battery. All of these components are essential in any chemistry experiment, and a chemist should always have these. Since the ChemBot contains all of these mechanisms in one, complex package, it makes it the perfect tool for dangerous experiments.

I appreciate how easy it is to model robots in Autodesk Inventor. The help system is wonderful, and the user interface is really easy to catch onto. I used the constraint tool constantly, and I also used the distance tool a lot to make sure all of the components fit properly. I don’t think I could have done this without Autodesk. At first, I had to draw out my designs on paper. When I started with Autodesk, I did small assemblies first, and then created one large assembly out of them. At every step, I made sure to add in all of the little nuts and bolts, which was very easy with Autodesk.