

## A CREATIVE INTRODUCTION TO SOLIDWORKS USING A RAPID PROTOTYPING MACHINE

When introducing our Biomedical Engineering and Engineering Physics students to Solidworks, I ask them to create a simple part for production on a Dimension SST 1200 3-D printer, giving them both experience with Solidworks and a souvenir to take home. The parts are created subject only to the following constraints:

1. The volume of material used must be less than 0.5 cubic inches.
2. The dimensions of the imaginary container in which the object can fit must be less than 2"x2"x2".
3. Their initials must appear on the object as a boss or a cut.

Once the parts are created in Solidworks, they are exported as .stl files and loaded into the 3-D printer. Students have a choice of producing a "dogtag," or a design of their choosing. Typically, about 50% of the students can't resist the challenge. Below is a particularly creative example of their ingenuity.



The 3 pictures above show a base clef in the front view, a treble clef from the right side view, and a pictorial view providing a 3-D image of the part. The student's initials (not shown) appear on the bottom of the base.

Students have the option of creating a simple "dogtag." Both an image of a sample dogtag and instructions for creating the part in Solidworks are provided below:

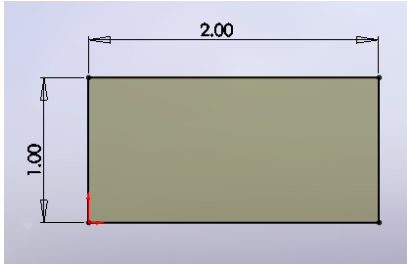


As a final note...before we acquired our own 3-D printer, we were able to partner with a local company to produce our Solidworks parts, which may be an option for you.

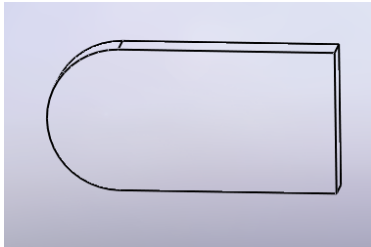
Annette Oertling, Ph.D.  
Tulane University School of Science and Engineering

## “DOGTAG” INSTRUCTIONS

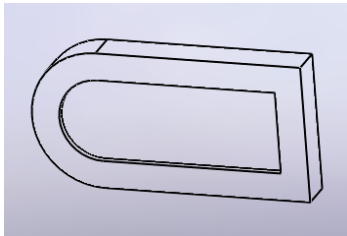
1. Create an extruded 1" x 2" base. Extrude to a blind depth of 0.25" .



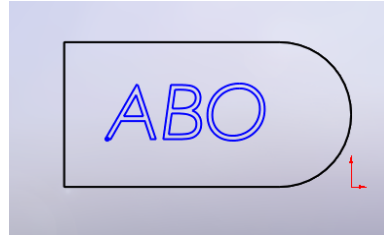
2. Fillet 2 corner edges with a 0.5" radius.



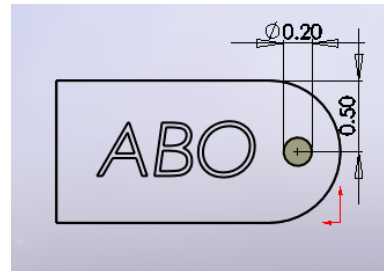
3. Shell out 1 face to a depth of 0.20" .



4. Add your initials to the face opposite the one you have shelled. There is a text sketcher on the sketch tool bar. It looks like a capitol A. Cut to a blind depth of 0.15" . Do not cut all the way through!



5. Extrude cut a hole as shown.



6. Create a 0.125" fillet on the edges on the top surface.

