



Project 3: Multi-Density 3D Printed Boat

For the Olin class Quantitative Engineering Analysis, we designed a boat and analyzed its properties; my project partner and I made a simple cut paraboloid which reaches width 6" at height 3". The craft also had a ballast of height 2" from the bottom cusp point, with an infill density of 75%. The remainder of the boat has an infill density of 10%.

Our boat's displacement ratio is 0.475. This does indicate that our boat shall float, because the quantity is less than 1. We did not need to tweak our design in order to make our boat float - we ended up with an acceptable displacement ratio from the get-go.

Our moment arm curve indicated that our boat has a stability at 0° and has an AVS of 128° . We got the AVS to be within the acceptable range by increasing the ballast height and height of the boat hull.

