Requirements

Volume / Thickness

Every surface of your 3D model must have wall thickness, or volume. We recommend a minimum thickness of 0.254mm.

Manifold / Water-tight –

Your model must be water tight – the mesh or surface of the 3D model must be a solid or “manifold”. When you have a non-manifold model, edges or surfaces of the model where three faces share a single edge, several surfaces are connected to a single vertex, or faces are connected into a polygon, but are open without wall thickness. Check out http://bit.ly/2Fpm1T9 for more information.
Considerations

**3D Printer / Model Dimensions**
Check the dimensions of the printers available to you. Will the staff need to scale your model to fit on one of the printers?

**Overhang Angles / Supports**
3D printers print layer by layer, from bottom to top. Therefore, if you’re modeling a bridge, which has empty space under an arch, or the top of your model is hangs over the base, your object will require ‘supports’ to prevent sagging. Supports should be avoided, if possible, as they can be difficult to remove, may damage / affect the finished look of the model upon removal. Generally, angles of $45^\circ$ or less, will print without supports.

**Foundation / Base**
The best 3D models have a solid foundation or a flat surface for the rest of the print to build upon. An artificial base, called a ‘raft’ can be added to models prior to printing, but like supports, rafts can been difficult to remove.
Considerations, continued

Floating Structures

When printing words like a lowercase “i” if there isn’t a base for the dot to lay on, the dot will print, but not be attached and subsequently fall out of the printed model.

Resolution / Layer Height

Consider the size, detail, and end use of your model. The higher quality or better the resolution, the longer the print will take and the more material it will use.