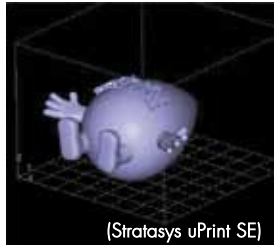




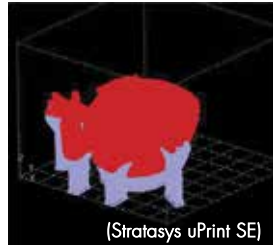
SUPPORT MATERIAL

All 3D printers generate support material differently, and all support material types have different post-processing and finishing requirements. The **Stratasys F120's** support material is dissolvable and washes away in a cleansing bath. The **FormLabs Form 2 & 3, Ultimaker 3 & S3** and **MakerBot Replicator+** printers do not have dissolvable support material and their support structures must be clipped and/or sanded away manually.



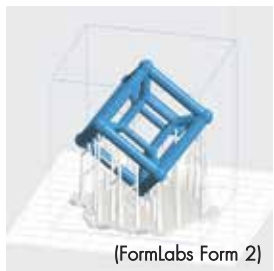
(Stratasys uPrint SE)

Model before support generation

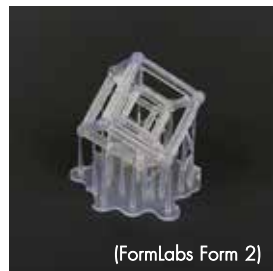


(Stratasys uPrint SE)

Model with support generation



(FormLabs Form 2)



(FormLabs Form 2)

MEASUREMENTS IN

In the bottom right panel of the Netfabb window, you will see basic dimension information about your part, including size and volume, which can be used to estimate your cost (not including support material).

Information					
Length:	<input type="text" value="9.50"/>	in	Volume:	<input type="text" value="23.06"/>	in ³
Width:	<input type="text" value="9.50"/>	in	Area:	<input type="text" value="162.21"/>	in ²
Height:	<input type="text" value="0.49"/>	in	Triangles:	<input type="text" value="20208"/>	

1 of 1 part is selected.

For a more detailed guide on how to use Netfabb to measure and resize your models, please refer to our video guide which can be found here:



http://youtu.be/7pg_CESwWj8

The Fablab staff can contact you prior to printing your job with a more accurate cost estimate (including support material) at your request.



PRICING

You are responsible for paying for all build and support material. When dropping off your job, you must indicate on the order form whether you would like to be called with a cost estimate prior to printing your model.



Stratasys



FormLabs Form 2



MakerBot Replicator+

- **Stratasys F120:** ABS Plastic \$7.00 per/cubic inch
- **FormLabs Form 2 & 3:** Resin \$0.50 per/ml (castable or flexible, \$5.00 surcharge for Ultra High detail)
- **Ultimaker 3 & S3:** PLA Plastic \$0.50 per/gram or Specialty filaments \$0.75 per/gram (\$5.00 surcharge for Ultra High detail)
- **MakerBot Replicator+:** PLA Plastic \$0.35 per/gram
- **\$5.00 minimum charge for all 3D printing jobs**



FABLAB POLICIES

Turnaround time for full-service printing is 5 business days, but this may vary and is subject to change. (Stratasys F120, FormLabs Form 2 & 3, Ultimaker 3 & S3 and MakerBot Replicator+)



3 D PRINTING GUIDELINES

HOURS OF OPERATION

Monday - Friday 9 am - 6 pm
Pomerantz Center 5th Floor D529A
212 217.5470 | www.fitnyc.edu/printfx



FULL-SERVICE 3D PRINTERS

The Stratasys F120 Highlights:

Good for: Large durable models like toys, functional prototypes, with very clean grain printing

Print Quality: Durable & High Details

Material: ABS Plastic

Type of Printing: Fused-Deposition Modeling

Support Material Type: Dissolvable Material

Build Size: 10"L x 10"W x 10"H

Layer Resolution: 0.33 mm to 0.254 mm



The FormLabs Form 2 & 3 Highlights:

Good for: Jewelry, miniature models, and hollow shapes with very high resolution

Print Quality: Extremely High Details

Material: Resins Plastic

Type of Printing: Stereolithography

Support Material Type: Clippable Material

Build Size: 5.7"L x 5.7"W x 6.9"H

Layer Resolution: 0.100 mm to 0.025 mm



The Ultimaker 3 & S3 Highlights:

Good for: Multi-colored models like toys, offers multiple materials, with nominal clean grain printing

Print Quality: Durable & High Details

Materials: PLA, Nylon, Stonefil, Metal Composite, Wood Composite, Carbon Fiber, Magnetic PLA, Electrical Conducting PLA, Flexible PLA, and other Composite Resin Materials.

Type of Printing: Fused-Deposition Modeling

Support Material Type: Clippable and Water Soluble Support Materials

Build Size: 8.5"L x 8.5"W x 7.9"H

Layer Resolution: 0.2 mm to 0.02 mm



The MakerBot Replicator+ Highlights:

Good for: Medium size models, functional prototypes, with very low cost printing

Print Quality: Basic & Limited Details

Material: PLA Plastic (Corn based bio-plastic)

Type of Printing: Fused-Deposition Modeling

Support Material Type: Clippable Material

Build Size: 11.6"L x 7.6"W x 6.5"H

Layer Resolution: 0.2 mm to 0.10 mm



ACCEPTED FILE TYPES

Only STL files will be accepted for 3D printing.

- Most 3D CAD platforms (e.g. AutoCAD, SolidWorks, Rhino, etc) can natively export 3D files as STLs.
- **Netfabb Standard** (freeware) can be used to convert multiple file formats to STLs.



CHECKING FILES FOR ERRORS

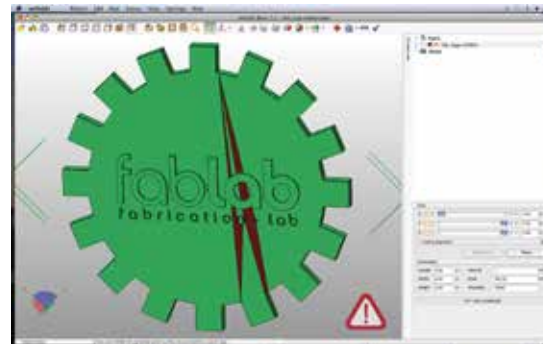
All 3D file formats are prone to errors in geometry. The most common errors are inverted faces due to reversed normals, and holes in the mesh due to bad/open edges. Files with these errors will not print correctly, and must be fixed by the client before a job can be submitted to our 3D printer.

Netfabb Standard is a freeware STL viewer that can open your 3D files and diagnose common errors, as well as perform basic fixing and scaling functions on your models. Netfabb Standard is installed on the computers in the Self-Service 3D Lab, and can be downloaded here:



<https://www.autodesk.com/education/free-software/netfabb>

To check your file for errors in Netfabb Standard, open the program and **choose Project → add Part, and select your file**. The program will open and display your STL file, and if it detects errors in your file it will display a large exclamation point in the bottom right hand corner of the screen.



DIAGNOSTICS

For a more detailed analysis of the problems with your file, **choose Extras → New Analysis → Standard Analysis**. You will see this information in the side panel.

Holes:	269	Bad edges:	0
Boundary edges:	1052	Boundary Length:	16.98 in
Flipped triangles:	6		

Surface is closed:	No
Surface is orientable:	Yes

Inverted Normals (Flipped Triangles): This indicates the highlighted faces are inverted, simply put, that the geometry is "inside-out." This is often a result of improperly scaled or duplicated geometry in a 3D program. Reversing the face normals in your 3D program will fix this error.

Bad Edges: This indicates the highlighted edges are disconnected or open. The 3D printer software can only properly recognize a piece of geometry that is a completely closed, solid shell with no openings. If your model requires a hollow opening or hole, you must create a backside and interior wall, so the faces of the model still form a closed surface.



FIXING FILES

Netfabb Standard has an automated repair function that will resolve many of the most basic errors that occur in STL files. For a detailed walkthrough on fixing files with Netfabb Standard, please refer to our video guide which can be found here:



<http://youtu.be/cqrpGn87sxw>

In some cases, you may have to return to the original 3D program you used to create the file in order to fix larger errors.

PLEASE NOTE: You are responsible for performing these fixes before submitting your file to us. If we detect any problems with your file, we will stop processing your job and will not continue until an updated file is submitted with the appropriate fixes.