Assignment for a department or faculty of the TU and it is to be internally accounted, please provide a Baancode;	Baancode:	P5:

01-03-2024

ORDERFORM FOR 3D PRINTING

Name: _____

Studentnumber: _____Study: _____

Telephone: _____Course: _____

E-mail: _____

Date: _____

Model details:

Select printing technique: O Ultimaker – O Gypsum

Material for Ultimaker: O White or O Transparent, Other requirements:_____

(for more information on techniques, see the back of the form!)

Price per 3D printing technique

- Ultimaker   € 0,10 per/gr
- Gypsum   € 0,40 per/cm3

Part 1 .... gr / cm3	Part 6 .... gr / cm3	Part 11 .... gr / cm3
Part 2 .... gr / cm3	Part 7 .... gr / cm3	Part 12 .... gr / cm3
Part 3 .... gr / cm3	Part 8 .... gr / cm3	Part 13 .... gr / cm3
Part 4 .... gr / cm3	Part 9 .... gr / cm3	Part 14 .... gr / cm3
Part 5 .... gr / cm3	Part 10 .... gr / cm3	Part 15 .... gr / cm3

Please prepare an STL-file using your CAD software, and hand this in together with your original file which can be Rhino / Sketchup / Solidworks or other.

Total Material:
.............................gr / cm3

Make sure your drawing is "clean" all surfaces should be closed and preferably not intersecting. If you use Rhino you can check for naked edges, by typing **showedge**.
And if you want to print with the **Ultimaker**, you can also download the free Cura software for processing files for 3D printing. The program can give an indication of the price and printing time, set layers height to 0,2mm and infill to 15% (these are the most commonly used settings).

TOTAL COSTS:

€

Initial Desk:

Strength and dimensions:

- The minimum wall thickness is 1 mm, if it's vertically or horizontally orientated, or 1,5 mm, if it's diagonally orientated.
- A column should be at least 2 by 2 mm in section.
- The maximum building area for the Ultimaker is 20cm by 20cm and a height of 20cm
- The Gypsum printer has a bed of 25cm by 20cm and a height of 20cm

3D printing

When 3D printing keep in mind that this is primarily used for parts that can't be or are very difficult to (precisely) make by hand. And that during graduations times the queue for printing can go up and big orders by a single person can be rejected if they take to much time. This is to keep the technique available for all students.

Support

If your 3D printing difficult shapes or structures, the model might need something called support. This is a structure that supports the 3D print in a way that makes the build possible. Think about overhangs and complex internal structures. In most cases the support needs to be removed by hand. Try to minimise the use of support by splitting models in smaller parts or orienting it in a way that it uses no or less support. Parts can easily be glued together later!

Ultimaker

This is the most commonly used 3D printer and is suitable for a wide range of models. The printer uses a plastic called PLA and extrudes this through a heated nozzle. The Ultimaker uses a single material called PLA to build both a model and support structure. This is suitable for most models. If it has overhangs or a hollow part it will need support that later needs to be removed by the student.

Gypsum

This technique is used for models that need more fine detail and that have a complicated geometry. The printer builds up the model by selectively hardening parts of a layer of powder. With this method the unhardened power serves as a support layer for the 3D print. After printing the model is covered in lose powder and need to be cleaned by blowing away the excess powder. With this printing method you pay per cubic centimetre so it is best to minimise this by creating a hollow model. In Rhino you can check the volume of a solid, by typing volume and selecting the object. If you work in millimetres it will show mm3, if that is the case divide the volume by 1000 and then multiply it by 0,4 (the price per cm3).

Any questions about 3D printing or preparing a model can be directed to – Camlab-BK@tudelft.nl For specific questions about Rhino or other programs you can visit Adhoc.