Design Modelling and Fabrication Lab
Faculty of Architecture Design & Planning
Level 1, Wilkinson G04
The University of Sydney | NSW | 2006

Laser Cutting Induction

Alpha (Universal)
810 x 450mm
$15.00 per 30 minutes
4.5mm max. material thickness

Delta (Trotec)
1240 x 710mm
$25.00 per 30mins
12mm max. material thickness
6mm+ materials require much greater appointment lengths

Gamma (Trotec)
1240 x 710mm
$25.00 per 30mins
12mm max. material thickness
6mm+ materials require much greater appointment lengths

Finding The Templates
1. Templates are updated each year so please ensure that you have the 2014 template
2. Machines are recalibrated and templates improved each year so this is very important.
3. Delta and Gamma share a template. Alpha has a different template.
4. Templates are found via this link: http://sydney.edu.au/architecture/atsc/digfab/machines.html

Booking The Laser Cutters
5. Book via: http://sydney.edu.au/architecture/atsc/bookings.html
6. Read the Terms & Conditions, click to agree to terms
7. You can book up to 14 days in advance
8. On booking matrix the yellow square denotes a bookable time, red cross denotes a booked time and grey square denotes that lasers are not available to book.

Laser Cutter ALPHA

«previous next»

weekday / month / day	M 03 24	T 03 25	W 03 26	T 03 27	F 03 28	S 03 29	S 03 30
9:00 am							
9:15 am							
9:30 am							
9:45 am	×						
10:00 am	×						
10:15 am		×	×				
10:30 am		×	×				
10:45 am	×		×		×		
11:00 am	×		×		×		
11:15 am	×				×		
11:30 am	×				×		
11:45 am					×		
12:00 pm					×		
12:15 pm							
12:30 pm							
12:45 pm							

Laser Cutter DELTA

«previous next»

weekday / month / day	M 03 24	T 03 25	W 03 26	T 03 27	F 03 28	S 03 29	S 03 30
9:00 am							
9:15 am							
9:30 am							
9:45 am	×	×	×				
10:00 am	×	×	×				
10:15 am	×	×	×	×			
10:30 am	×	×	×	×			
10:45 am	×		×	×			
11:00 am	×		×	×			
11:15 am	×			×			
11:30 am	×			×			
11:45 am	×			×			
12:00 pm	×			×			
12:15 pm	×			×			
12:30 pm	×			×			
12:45 pm							

1. 1 hour per student per week. Can be in two 30min slots or one 1-hour slot.
2. Fill in booking form, using the password **fablab**.
3. You will receive a booking confirmation to the entered email address.

Canceling The Laser Cutters
4. There is a link to cancel your booking in your confirmation email.
5. You MUST cancel your booking at least 3 hours before your booking
6. Failure to cancel your booking results in a 2 week ban

7. **Weeks 11 – 13 failure to cancel results in a fine of the full booking cost**

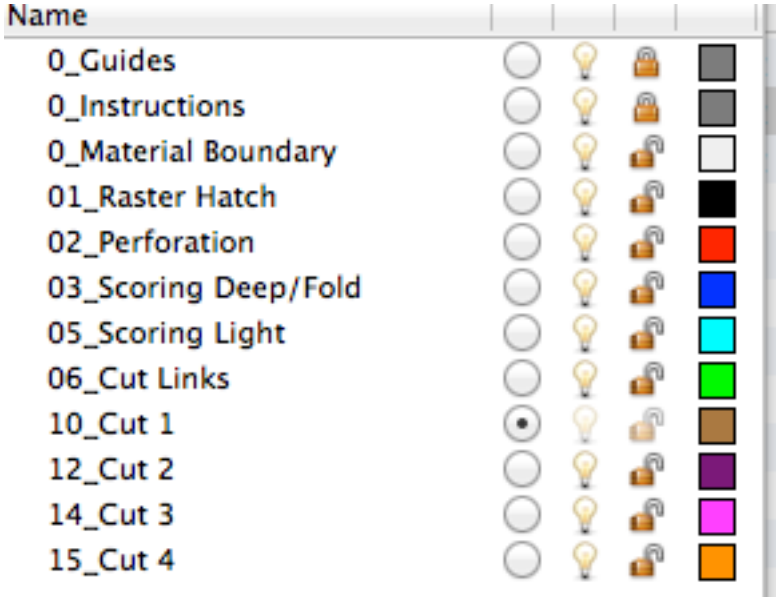
Booking Terms & Conditions

1. Arrive 10 minutes before booking
2. Fully prepare print files before your booking (any file correction will come out of your booking time)
3. Payment is to be made for the whole period booked even if the job takes a shorter time.
4. Payments must be made on the day – Extro account
5. Laser Cutting not available to 1st years BArch students
6. Class specific bookings are in addition to your usual 60 minutes per week
7. A stand-by list is available during peak semester periods (more info on website).

Template Use

1. Never model in the layout tabs. They are not working views, and are only used to print from and will result in scaling of your overall model and incorrect alignment.
2. Laser templates are to be used at a 1-to-1 scale. After importing your design into the template, scale it appropriately to fit the template guides.

LAYERS



0_Guides: to stay locked
0_Instructions: to stay locked
0_Material Boundary: non print layer. Use to outline actual material size
01_Raster Hatch: see staff for information
02_Perforation: dot-dash cut used to facilitate both folding and tearing

03_Scoring Deep/Fold: Does not cut through the material, will only score approx. 2/3 of the way through the material. Used for: labeling, contour lines, folding etc
05_Scoring Light: Does not cut through the material, will only score approx. 1/3 of the way through the material. Used for: labeling, contour lines etc
06_Cut Links: for cutting paths with attachment links – only use for small geometry
10_Cut 1: 1st cutting path for internal lines
12_Cut 2: 2nd cutting path for internal lines
14_Cut 3: 3rd cutting path for internal or perimeter lines
15_Cut 4: 4th Cutting path for perimeter lines

GENERAL TEMPLATE GUIDELINES

- Use cut layers 1 to 4 for small to large geometry. Always cut from the inside out
- With plastics, especially Perspex, alternate cut layers that are in close proximity to one another.
- Make2d or SelDup in Rhino. Autokill in AutoCAD
- Join vectors where possible – this speeds up laser cutting time considerably
- Object properties – display colour must be BY LAYER
- Minimum distance item to item is:
- 1mm for plywood, card, solid timbers
- 2mm for plastics (Perspex, polypropylene, acrylic)
- Minimum distance item to sheet (i.e. margin) is 2mm.
- Offsetting (for finger jointing / other locking systems) between 0.05 and 0.2mm depending on the material. It's recommended that if a tight fit is required tests are carried out with various offset amounts prior to cutting your full design.

RHINO NEST & MINIMISING MATERIAL WASTE

To ensure that you are using your whole sheet of material use these two techniques.

1. **Rhino Nest Plug-in**: automatically nest all your geometries so that you use each piece of material to its fullest potential.
2. **Place cut items onto a no print layer** (e.g. material boundary) and keep the template and the physical material labeled so that when you next laser cut you can place your new designs onto the same template, and cut on the un-used portion of that same material sheet.

Materials

Regardless of type of material, your selection must be flat (tolerance ±1mm).
Density and thickness of material greatly effects the cutting time required for each material sheet. Allow additional cutting time for thicker materials.

Material sizes: are incredibly inconsistent; ensure you have measured your chosen material before laying out your template. The template layout size is the maximum laser bed size, NOT the size of the physical material onto which you are cutting.

In-house materials: a range of the most popular materials, we try to keep up with demand but make no guarantees that we will have all products in stock at all time. You will need to come and check in person

that we have the material you wish to use – we do not partake in email conversations about stock prices and availability. We generally keep a supply of corrugated card, boxboard, screen-board, air craft ply, interior plywood, perspex and polypropylene.

Plywood V's Corrugated Card: DMaF stock a 7mm corrugated card product which makes a solid base for models, and has the same strength as a 3 or 4mm plywood. This product is much cheaper (almost ¼ of the price) and is also much more environmentally sustainable than plywood.

External materials: if you are intending to cut your own materials new to DMaF, you must bring in the Material Safety Data Sheet (MSDS). These can be found online, particularly helpful link is http://www.msds.com/ or http://www.ehso.com/msds.php

Banned materials: metals, exterior plywood (due to glue used), materials containing PVC, bleach, toxins or any carcinogens.

Exterior Plywood: we have ongoing issues with students bringing in exterior plywood, which the lasers cannot cut. If plywood has black glue in between each ply layer then it is exterior plywood and we will not allow you to cut it on our lasers.

Free/ Cheaper Materials: we have a rack of free materials in the DigFab hallway just outside the laser cutter room. There is also a rack of cheaper materials (usually 1/3 or ½ of the price).

Safety & House Rules

- Maximum of 2 people to attend per booking.
- If you help out with keeping the laser cutting area clean – tidying the free cheap racks, putting away scrap materials, wiping laser cutters – we will make sure you're rewarded!
- Students are not to use the staff computer.
- Due to high volume of USB's that are brought into the DMaF Lab we do get viruses on our computers. Best practice to protect your files is to email them to yourself or to access them via dropbox.
- Closed in shoes are a must in all areas of DMaF, including the laser cutting room. Make sure you wear correct footwear or you wont be able to complete your booking.
- Leave the laser cabinet closed approx. 30-60 seconds after each cut has finished. The laser cutters extraction will remove all harmful particles if you give it this time to do so.
- There is always a blue recycling bin in the laser room into which all paper and card waste should go. All other waste goes into the normal rubbish bin.