MAKER STUDIO
Orientation Points to Remember
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Access and sign the Acknowledgment of Risk form

Some materials are excluded from the Maker Studio and all materials must be accompanied by a MSDS sheet. Materials are only provided for the purposes of teaching and learning at the discretion of the Maker Studio staff. Make sure you are familiar with procedures for the Maker Studio. We do not store materials in the Maker Studio.

Copyright policy

Files used in the Maker Studio must abide by all applicable Mount Royal University Policies and Federal, Provincial, and Municipal laws. This includes compliance with intellectual property laws, including those set out under the Canadian Copyright Act. It is the user’s responsibility to obtain all necessary legal rights and permission regarding files being used. For more information, please see the Library’s copyright guide at http://library.mtroyal.ca/copyright. The
TROTEC SPEEDY 400 LASER CUTTER

Materials: wood, acrylic, fabric, leather, cardboard, ceramic, glass (no heat resistant glass).
Software: Illustrator / Photoshop
File types: .ai, .psd
Machine details: Maximum area 24 x 39 inches
Production time: Depends on the file type, 1-200 minutes

How to prepare for using this tool:
1. Create your design in Adobe Illustrator.
2. All colours must be:
   RGB Red (255, 0, 0) = cutting - stroke .001
   RGB Blue (0, 255, 0) = engraving - stroke .5 minimum
   RGB Black (0, 0, 0) = etching

For more detailed instruction please read our Laser Cutting Instruction document.

When your design is completed you can submit it at the MRU Library Maker Studio website.

If you have questions about this, please discuss your project with Maker Studio staff before using the tool.

Health and Safety:

- The laser cutter is a class 2/ class 4 laser. All signs and warnings in the room must be read and adhered to before using the machine.
- You must have a staff member with you at all times while using this machine.
- Users must arrive with a MSDS sheet for the material being cut or etch otherwise the material can't be used.
- Materials that may cause odours when cut must be removed from the space immediately and it is advisable to bring a bag to seal them in until they can be placed in a well ventilated space (outdoors).
- Maker Studio staff have the right to refuse any material or file deemed unacceptable.
- Time using the laser cutter is limited and academic work is prioritized. Time is booked for projects on an individual basis for one hour.
- The machine has moving parts so long hair should be tied back and jewelery should be removed.
VINYL PRINTING AND CUTTING

Materials: heat transfer material or generic printable vinyl provided by the Maker Studio for the purposes of teaching and learning at the discretion of the Maker Studio staff.
Software: Adobe Illustrator
File types: Illustrator Ai, and any other image file (PNG, JPEG, TIFF, etc.).
Machine details: 300~350mm width, No machine limit on length.
Production time: dependent on the project scale.

How to prepare for using this tool

1. Create or upload your design in Adobe Illustrator.
2. To create a cut line around your design first you must download the Roland Versa Works swatch which can be found here. Even though it will appear blank, download it.
3. Open the swatch window and choose “window” and then “swatches”.
4. Click on the 4 horizontal lines in the upper right corner.
5. Click on “open swatch library” then choose the “Roland Versa Works” file from where you have downloaded it. A swatch window should appear in Illustrator.
6. Choose the pink cut/contour swatch as the stroke for your cut lines.

To create cut lines

1. In order to have your cut lines follow the outline of your design it must be vectors not rasters (pixels). If you are using a raster image you will need to draw a shape such as a circle or rectangle around it in Illustrator which will become the cut line. Alternatively you can vectorize the image in Illustrator which will allow you to make a cut line following the outside of your design.
2. Once you have a vectorized image, open “Layers” window.
3. Duplicate the layers.
4. Name the back layer “Image” and lock and hide this layer.
5. Name the top layer “cut line”.
6. Select “cut line” then click on “object” in the toolbar and “expand”.
7. In the Pathfinder window choose “unite”.
8. In the appearance window choose “stroke”.
9. In the Roland Versa Works swatch window choose pink for cutting.
10. Click on “stroke”. Make sure “aligned to centre” is chosen.
11. Stroke must be less than .25 pnt.
12. Unlock the Image layer and bring forward.
13. Submit your finished file on the MRU Maker Studio website by filling out the form.
14. You will receive an email when the print is completed. This could take up to 3 weeks. Please pick up your print during open hours.

Health and Safety:

- The cutting machine has sharp blades which should not be touched at any time.
- The machine has moving parts so long hair should be tied back and jewellery should be removed.
CAMEO 3 SILHOUETTE CUTTING MACHINE

Materials: paper, vinyl, fabric, veneer
Software: Silhouette Studio
File types: DXF and other graphic drawing exchange file types.
Machine details: Maximum area 12” x 24”.
Production time: Depends on the file type, 1-10 minutes.

How to prepare for using this tool:
Download Silhouette Studio software
Have your design prepared in one of these ways:
  1. Create your design in the Silhouette Studio Software
  2. Have your line work/outlines saved as a DXF file
  3. Have your JPEG imported into Silhouette and trace it using the tools in the software

If you have questions about this, please discuss your project with Maker Studio staff before using the tool.

Health and Safety:
- The Cameo Silhouette cutting machine has sharp blades which should not be touched at any time.
- Blades must not be exchanged without supervision.
- The machine has moving parts so long hair should be tied back and jewellery should be removed.
CARVEY BY INVENTABLES

Materials: wood, plastic, metal
Software: Easel online: http://easel.inventables.com/
File types: SVG or g code
Machine details: Maximum area of 11.6” x 8” x 2”. Material height + depth of cut can’t exceed 2”. Production time: Depends on the file type, 1-40 minutes.

How to prepare for using this tool:

Make an account with Inventables to access the Easel Software
Have your design prepared in one of these ways:
   1. Create your design in the Easel Software
   2. Have your design exported into an SVG file or
   3. Create your own G code

Upload the file to Easel and follow the prompts in the software.

If you have questions about this, please discuss your project with Maker Studio staff before using the tool.

Health and Safety:

- The Carvey has sharp drill bits which should not be touched without gloves.
- Drill bits should not be exchanged without supervision
- The machine has moving parts so long hair should be tied back and jewellery should be removed.
- Do not remove parts that are dusty without a dust mask.
BUTTON MAKERS

Materials: paper (with your design), thin fabric
Software: Download a template from online for the correct button size in whatever software you are comfortable using (e.g. Word, Adobe Photoshop).
File types: N/A
Machine details: Button sizes: 1", 1.75" and 3"
Production time: Depends on the quantity of buttons required.

How to prepare for using this tool

1. Decide on the size of button you would like. We have 1", 1.75" and 3" buttons.
2. Create your graphic. You can make a button out of anything put on a piece of paper (e.g. a drawing, your graphic printed out). Be sure to size your graphic to fit the correct size button. Download a template from online for the correct button size in whatever software you are comfortable using (e.g. Word, Adobe Photoshop).
3. Bring your paper to the Maker Studio to be cut and fit into the button of your choice.

Buttons are limited to 25 per project. If you require more than the limited amount you must provide the button making supplies.

Health and Safety

There is a danger of pinching. Keep fingers away from clamping parts.
FORM 2 3D PRINTER (SLA)

Materials: various resins: black, grey, white, clear
Software: Preform
File types: STL
Machine details: Maximum Build Area 5.7 × 5.7 × 6.9 inches (145 × 145 × 175 mm)
Production time: Depends on the file type, 10 minutes - days.

How to prepare for using this tool:
Create or download your 3D model. Save it as a STL and upload it through the Maker Studio page on the Library website.
Verify your file before submission:
  1. The file is the correct dimensions that you require
  2. The dimensions fit within the dimensions of the machine
  3. The file is a solid and does not have holes or open surfaces
  4. You have chosen the appropriate material and colour for your print
If you have questions about this, please discuss your project with Maker Studio staff before using the tool.

Health and Safety:
- The Form 2 uses an acrylic resin. This is toxic to consume, touch, and inhale. Use appropriate PPE as directed by the Maker Studio Staff (gloves).
- You must have a staff member with you at all times while using this machine.
- Processing the prints in the IPA causes fumes and should be avoided and only used in a well ventilated space
- The machine has moving parts so long hair should be tied back and jewellery should be removed.
- When removing supports small parts can become projectile. Use PPE as directed by Maker Studio Staff (eye and hand protection).
- When sanding objects use PPE as directed by Maker Studio Staff (eye and hand protection and dust mask).
MAKERBOT REPLICATOR Z18

Materials: MakerBot proprietary PLA filament, many colours - provided by the Maker Studio for the purposes of teaching and learning at the discretion of the Maker Studio staff.
Software: MakerBot Print
File types: STL
Machine details: 2,592 CUBIC INCHES, 30.0 L X 30.5 W X 45.7 H CM, 11.8 L x 12.0 W x 18.0 H IN
Production time: Depends on the file type, 10 minutes - days

How to prepare for using this tool:
Create or download your 3D model. Save it as a STL and upload it through the Maker Studio page on the Library website.
Verify your file before submission:

1. The file is the correct dimensions that you require
2. The dimensions fit within the dimensions of the machine
3. The file is a solid and does not have holes or open surfaces
4. You have chosen the appropriate material and colour for your print

If you have questions about this, please discuss your project with Maker Studio staff before using the tool.

Health and Safety:

- The form PLA filament and experimental filaments. ABS is not allowed.
- You must have a staff member with you at all times while using this machine.
- The machine has moving parts so long hair should be tied back and jewellery should be removed.
- Do not touch the machine when in motion.
- When removing supports small parts can become projectile. Use PPE as directed by Maker Studio Staff (eye and hand protection).
- When sanding objects use PPE as directed by Maker Studio Staff (eye and hand protection and dust mask).
- Edges can be sharp. Use PPE as directed by Maker Studio Staff (hand protection).
- Surfaces are hot, do not touch parts that may be hot to avoid burns.
PRUSA 3D PRINTER

Materials: PLA or PETG filament, many colours - provided by the Maker Studio for the purposes of teaching and learning at the discretion of the Maker Studio staff.
Software: Ultimaker Cura
File types: STL
Machine details: 10500 cm³ (25 x 21 x 20 cm or 9.84 x 8.3 x 8 in)
Production time: depending on the file type, 10 minutes - #'s of days...

How to prepare for using this tool:
Create or download your 3D model. Save it as a STL and upload it through the Maker Studio page on the Library website.
Verify your file before submission:

1. The file is the correct dimensions that you require
2. The dimensions fit within the dimensions of the machine
3. The file is a solid and does not have holes or open surfaces
4. You have chosen the appropriate material and colour for your print

If you have questions about this, please discuss your project with Maker Studio staff before using the tool.

Health and Safety:

- The form PLA filament and experimental filaments. ABS is not allowed.
- You must have a staff member with you at all times while using this machine.
- The machine has moving parts so long hair should be tied back and and jewelry should be removed.
- Do not touch the machine when in motion.
- When removing supports small parts can become projectile. Use PPE as directed by Maker Studio Staff (eye and hand protection).
- When sanding objects use PPE as directed by Maker Studio Staff (eye and hand protection and dust mask).
- Edges can be sharp. Use PPE as directed by Maker Studio Staff (hand protection).
- Surfaces are hot, do not touch parts that may be hot to avoid burns.
INDUSTRIAL SEWING MACHINE

Materials: Fabric and leather - light, medium, and heavy weights
Software: None
File types: N/A
Machine details: As large as desired
Production time: Depends on the project scale

How to prepare for using this tool:
Create a pattern and have your materials ready including fabric, notions and thread choices. You can cut the fabric at home or in the Maker Studio.

If you have questions about this, please make an appointment to discuss your project before using the tool.

Health and Safety:
- The machine has moving parts so long hair should be tied back and jewelry should be removed.
- Needles are sharp and fast moving. Keep hands free of moving needles.
BROTHER EMBROIDERY MACHINES

Materials:
- Fabric - light and medium weights
- Stabilizer

Software: Embroidery software (PE Design for use in the Maker Studio only)
File types: PES files on a USB
Machine details: As large as desired. For embroidery hoop:
- 5" x 6.5"
- 6" x 8.5"
- 6" x 13.5"

Production time: dependent on the project scale

How to prepare for using this tool:
Create a pattern and have your materials ready including fabric, notions and thread choices. You can cut the fabric at home or in the Maker Studio. For the embroidery machine, have your file created in your own embroidery software or be prepared to create the file in the Maker Studio using the PE Design embroidery software installed on the computer.

If you have questions about this, please make an appointment to discuss your project before using the tool.

Health and Safety:
- The machine has moving parts so long hair should be tied back and and jewelry should be removed.
- Needles are sharp and fast moving. Keep hands free of moving needles.
BERNINA SERGER

Materials: Fabric - light and medium weights
Software: None
File types: None
Machine details: As large as desired.
Production time: Depends on the project scale

How to prepare for using this tool:
Create a pattern and have your materials ready including fabric, notions and thread choices. You can cut the fabric at home or in the Maker Studio. The Serger trims edges if desired.

If you have questions about this, please discuss your project with maker Studio staff before using the tool.

Health and Safety:
- The machine has moving parts so long hair should be tied back and jewelry should be removed.
- Needles are sharp and fast moving. Keep hands free of moving needles.
SEWING MACHINES

Materials: Fabric – light and medium weights
Software: None
File types: N/A
Machine details: As large as desired
Production time: Depends on the project scale

How to prepare for using this tool:

Create a pattern and have your materials ready including fabric, notions and thread choices. You can cut the fabric at home or in the Maker Studio.

If you have questions about this, please make an appointment to discuss your project before using the tool.

Health and Safety:

- The machine has moving parts so long hair should be tied back and jewelry should be removed.
- Needles are sharp and fast moving. Keep hands free of moving needles.
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library.mtroyal.ca

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