Laser Cutting 101

What do we have?

- 2 types of machines
 - Universal PLS series Blue
 - Universal VLS series Red and Blue *on/off switch





What can we cut?

- Can cut up to ¼" acrylic and ¼" plywood
- Chipboard, Plexiglass, plywood, museum board- list on door and website



What CAN'T we cut?

- Any Metals
- Polycarbonate, styrene, PETG, anything that contains Vinyl.





How to set up a file

- Software Choices
 - Rhino
 - Illustrator
 - AutoCAD
 - Download Templates off SOA website
 - <u>http://soa.syr.edu/resources/technology/digital-fabrication/laser-cutting.php</u>

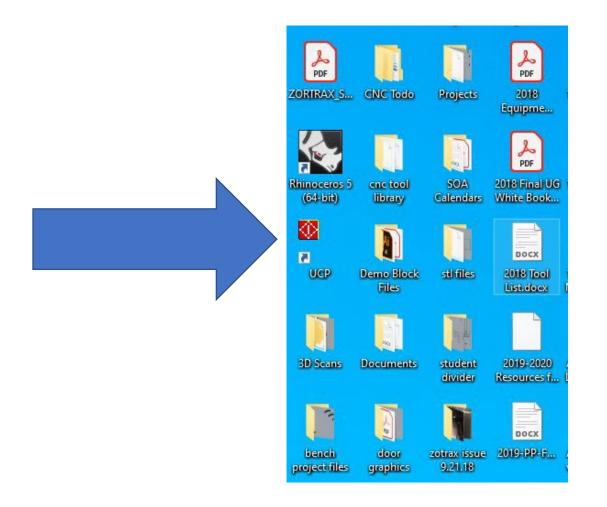
Template Basics

- Information for reminder at the top of the template
- Cut- BLUE
- Score- RED
- Fold- YELLOW
- Gray Hashed Line- Bleed area no cutting leave ¼" on edge

Using our laser Lab

- You must have a SOA login in order to use the laser machines.
- All students are encourage to reserve their 1 hour laser slot. 1 per day.
- Drop in laser use is fine. If someone is 10 mins late to a reservation you can use the machine.
- Laser 4 is a day of sign up machine. Paper product only machine NO PLASTICS!
- Remember to clean up after yourselves.
- Any questions please ask the monitor.

Start the UPC



- 1. 1. Once you have logged in you must start the UPC first.
- 2. The laser will not respond until you have done this.

- 18x32" material on cutting bed – real cutting area 17.5x31.5"
- Put material on shelf under the laser cutter

Do not put any materials on top of any laser or equipment

*** not a work/storage space***









Focus Tool

Push Button 1 Time

Focus Tool in position

Focus tool in CORRECT position.



YES!

NO!!! WRONG!!!





Screen change

Use Right arrow to Shift sensitivity-

***Note check under number

Use Right arrow to Shift sensitivity-

***Note check under number





Use UP arrow to bring table UP. ^^^^

Use DOWN arrow to bring table DOWN. vvvv

The Laser has a specific focal length. If you do not adjust the bed height with your material on it, the laser will not operate properly.

The notch in the focus tool Should just push off the Bottom of the carriage.



- ** the laser lens' have specific Focal length.
 - if the laser is too <u>HIGH</u>you will get soft burned etching results.
 - if the laser is too <u>LOW</u> –
 you will have wide cut lines and a very carbon heavy edges.



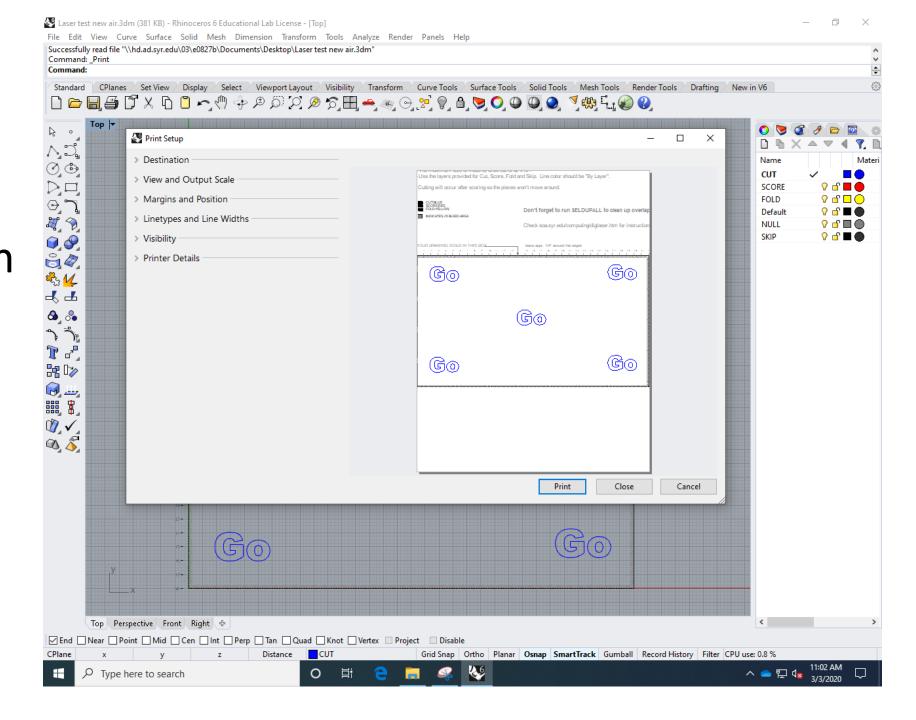
Setting the Z-height MUST BE DONE EVERYTIME YOU USE THE MACHINE FOR THE FIRST TIME OR YOU CHANGE MATERIALS



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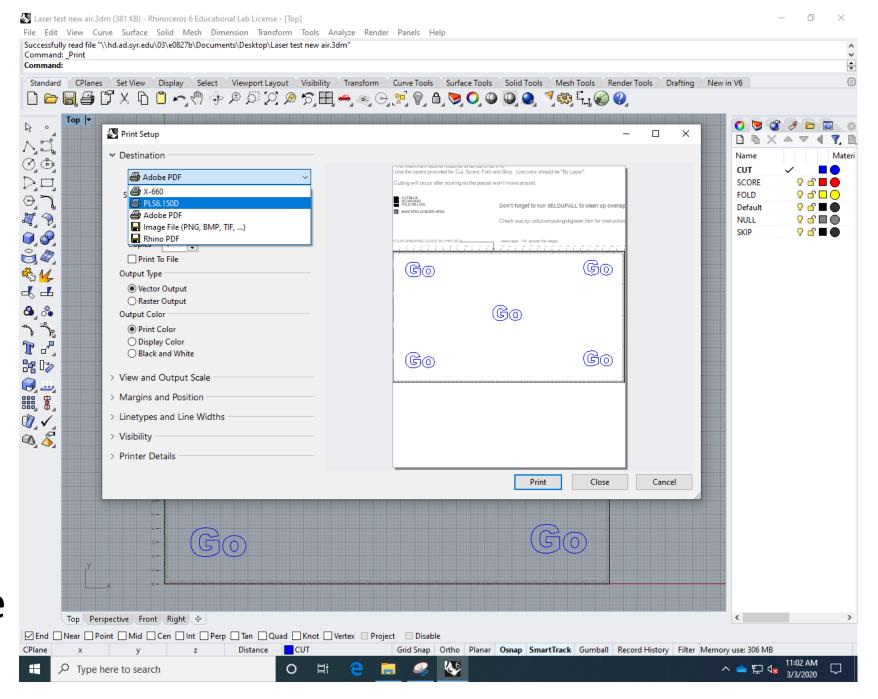
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Print Setup -Destination

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Select for Machine



Print Setup -Destination File

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Print Setup -View and Output Scale

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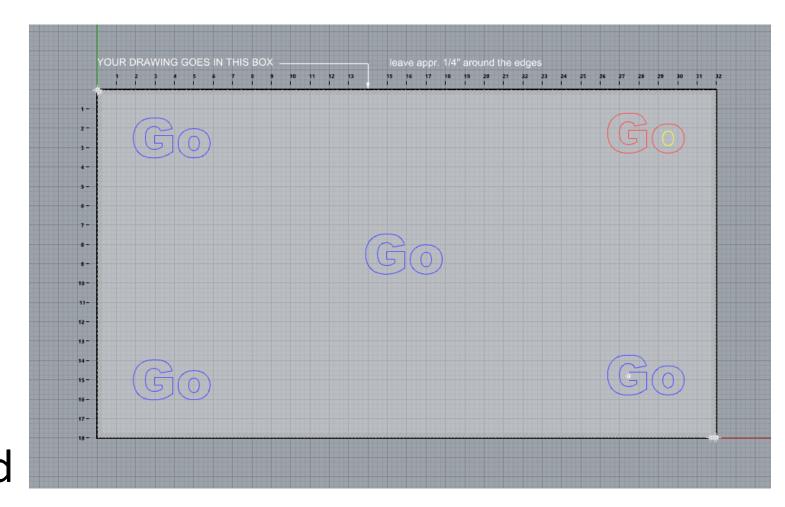
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Print Setup -View and Output Scale

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Print Setup -drag "gray" window across template work area -Hit ENTER when done. *turn on GRID SNAP and **END**



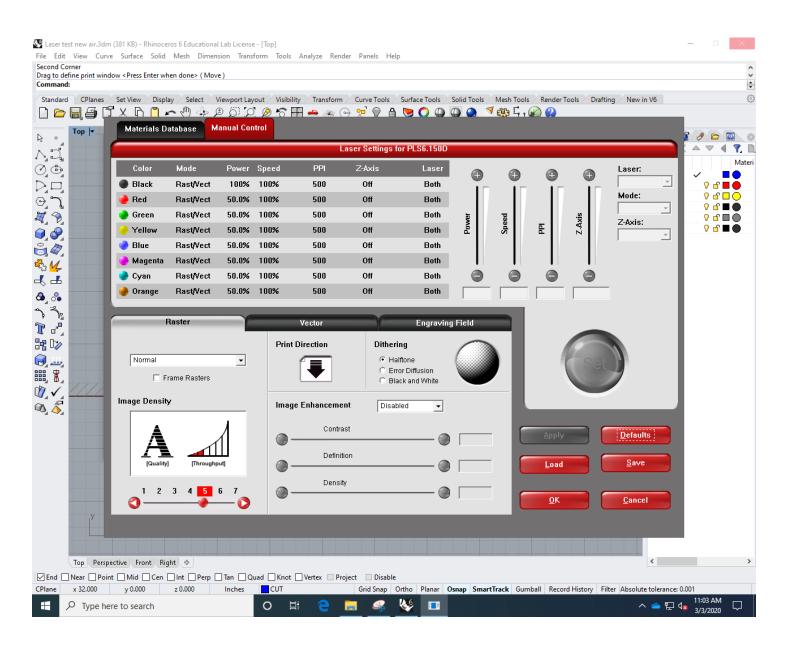
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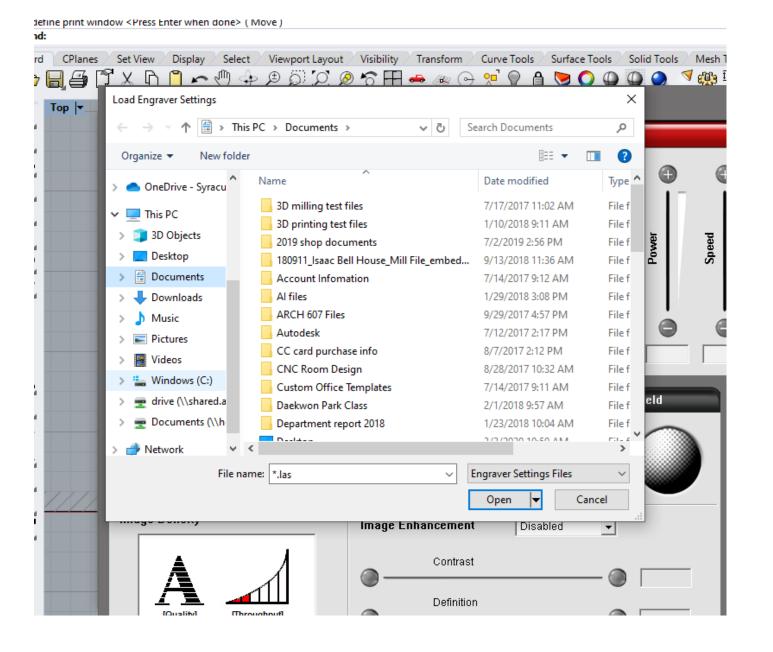
UCP Control Interface -Manual Control

DO NOT USE !!! "Materials Database" To find settings. Laser test new air.3dm (381 KB) - Rhinoceros 6 Educational Lab License - [Top] File Edit View Curve Surface Solid Mesh Dimension Transform Tools Analyze Render Panels Help Second Corner Drag to define print window <Press Enter when done> (Move) + Command CPlanes Set View Display Select Viewport Layout Visibility Transform Curve Tools Surface Tools Solid Tools Mesh Tools Render Tools Drafting New in V6 Standard - 🗐 🖨 🗗 X 🗅 📍 🗠 🖉 🖉 🖉 🖉 🖉 📅 🛲 ֎ 🕞 🛒 🖗 🛔 🔵 🔘 🚇 🚳 🖣 🚳 🖡 🍙 🞱 🗋 🗁 Materials Database Manual Contr Top -⊳ ∘ 1 10 700 700 70 Laser Settings for PLS6.150D ▲ ▼ ◀ ₹. Selected: Intensity Adjustment Find 🖓 🗗 📕 🔴 Raster V 🗗 🗖 🤇 ତ ୮ ଅନ୍ 0% Materials Database 🖓 🗗 🔳 🌒 Ceramic Vector Engraving 🖓 🖆 🔲 🔘 Fabric 0% 🖓 🖆 🔳 🌒 🗄 — Foam 8 Vector CuttingGlass 0% 2 V ┹┹ Natural Which Laser? ۵, 🗞 Benefic 🔽 Top - 50W Rottom - 50W 3 7: 🗄 — Rubber 1 2 📴 D>> Click to select material, double-click to edit, right-click for other commands. Notes: Print Special Effects Print Direction Vector Performance Normal -Standard Frame Rasters Units Fixture Type Material Thickness C Metric NONE ÷ Inches Load Save Merge Pages Cancel < Top Perspective Front Right 💠 End Near Point Mid Cen Int Perp Tan Quad Knot Vertex Project Disable x 32.000 CPlane y 0.000 z 0.000 Inches CUT Grid Snap Ortho Planar Osnap SmartTrack Gumball Record History Filter Absolute tolerance: 0.001 11:03 AM 0 Type here to search 0 Ξŧ へ 🥧 🏳 🕼 3/3/2020

UCP control interface -Manual Control -LOAD



- UCP control interface -Manual Control
 - -LOAD
 - -Windows (C) drive



UCP control interface -Manual Control

-LOAD

-Windows (C) drive

-Laser

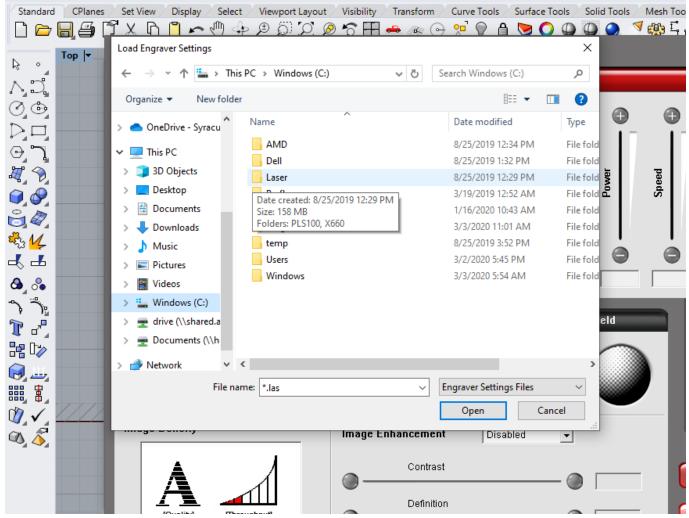
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- UCP control interface
- -Manual Control
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UCP control interface -PRINT

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Machine Display File Name On Display -big green "play" Button -PUSH to PRINT





WARNINGS

NEVER LEAVE YOUR MACHINE RUNNING -pause machine, call your partner, etc.

DO NOT WATCH THE LASER

- -it is very tempting to watch the machine work the light is damaging to your eyes!
- Comparable to the SUN!

QUESTIONS

Contact info: Michael Giannattasio Office 007 Email: Mgiannat@syr.edu

Let's go take a look...