

Introduction:

- This guide will help you to use 123D Make to import 3D digital models and export them as 2D files for cutting on the laser cutter and/or CNC router.
- Note: a free Autodesk account is required to export files from 123D Make
- Exported files will require further steps in Adobe Illustrator before they can be exported to either machine.

- I. Open 123D Make
- II. Click the **Import...** button [Figure 1]
 - A. Select your .stl or .obj file (.thing files must be exported as .stl from Digitizer for Makerware)
- III. Under **Manufacturing Settings**, click the **Pencil icon** to create a new custom material setting [Figure 2]
 - A. Click the '+' button in the lower left corner to add a new setting [Figure 3]
 - B. Double click the name to give it a name you will recognize, i.e. '12x24 luan sheet'
 - C. Set '**Units**' to 'in'
 - D. Set '**Height**' to '12' (or the height of your material)
 - E. Set '**Width**' to '24' (or the width of your material)
 - F. Set '**Thickness**' to the exact thickness of your material.
 1. Use the digital calipers in the lab to measure your material.
 2. Do not rely on the stated thickness—manufacturers generally do not state precise thickness
 - G. Click '**Done**'
 - H. Open the drop down menu beside the **Pencil icon** and select your new setting, i.e. '12x24 luan sheet' [Figure 4]
- IV. In '**Object**' size [Figure 5]:
 - A. use the '**Height**', '**Width**', and/or '**Length**' settings to the desired size of your final object.
 - B. Deselect '**Uniform Scale**' if you want to ignore the original proportions of your object
 - C. Select '**Original Size**' if you want to create a 1:1 model. Note: If you scanned your object on the Digitizer, your '**Units**' are likely in *millimeters (mm)*, rather than *inches (in)*; adjust accordingly

- V. Under '**Construction Technique**' [Figure 6]:
- A. select your desired method of construction.
 - B. Note that not every construction technique will work for every 3D model.
 1. If your model appears with a number of red lines, it means that the software cannot generate a model. Your material might be too small or your object size too large.
 2. You can also try to vary the number of axis.
 - C. If you are having lots of trouble creating a model that works, 'Stacked Slices' is the surest method for creating a workable model.
- VI. When you are ready to export your plans, go to the '**Get Plans**' box in the lower left corner of the program window. [Figure 7]
- A. '**Layout Arrangement**': Note that selecting 'Nested' will likely help you to conserve material by rearranging, or nesting, your pieces as closely as possible on the fewest possible sheets.
 - B. Click the **Paper icon**.
 - C. Along the bottom of the program window, next to '**File type**', select '**DXF**'. [Figure 8]
 - D. Be sure to export your model in *inches (in)*
 - E. Click '**Export**'
 1. Note: If you have not already logged in to (or created) an Autodesk account, you must do so at this point.
 2. Name your file. If your file requires multiple sheets, note that the extension is .zip. 123D Make will export a .zip archive containing all of the necessary .dxf files.
- VII. If you would like, you can save your 123D Make file to reopen and make changes later.
- VIII. Once you have saved your file, close 123D Make and open Adobe Illustrator to finish preparing files for the laser cutter.