MI3360-L

Making with the Consumer Fabrication Apps: 3D Print Utility, CNC Utility, and Autodesk® 123D® Make

Part two: Creating 3D terrain with 123D Make.

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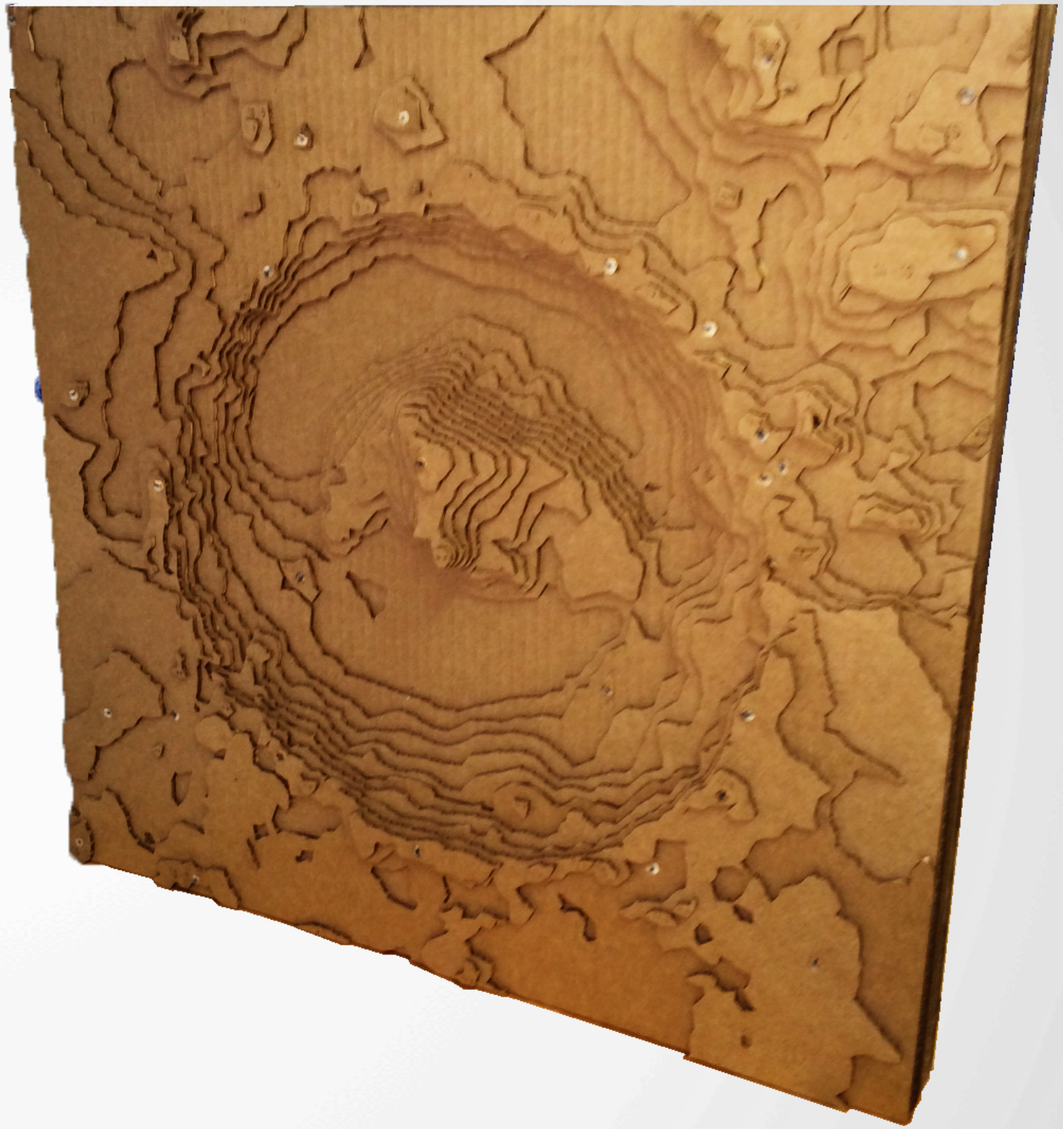
Autodesk Consumer Group Product Managers

Class summary

In this section of the lab you'll walk through the steps to create vector files for lazing the Gale Crater on Mars using Autodesk 123D® Make.



Class summary

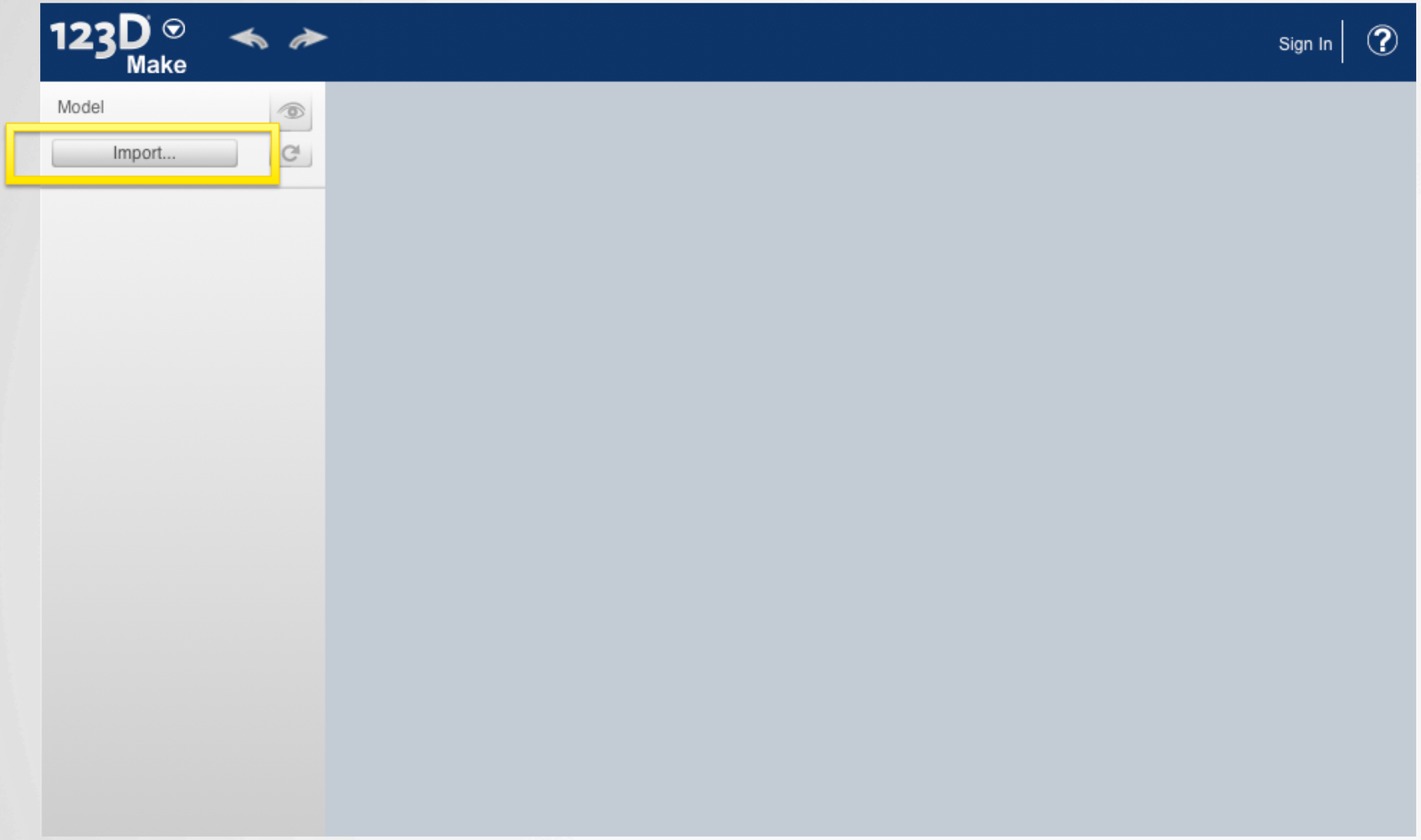
123D® Make is free and available for Windows, Mac, and runs online in Chrome.

Download link here : http://www.123dapp.com/make

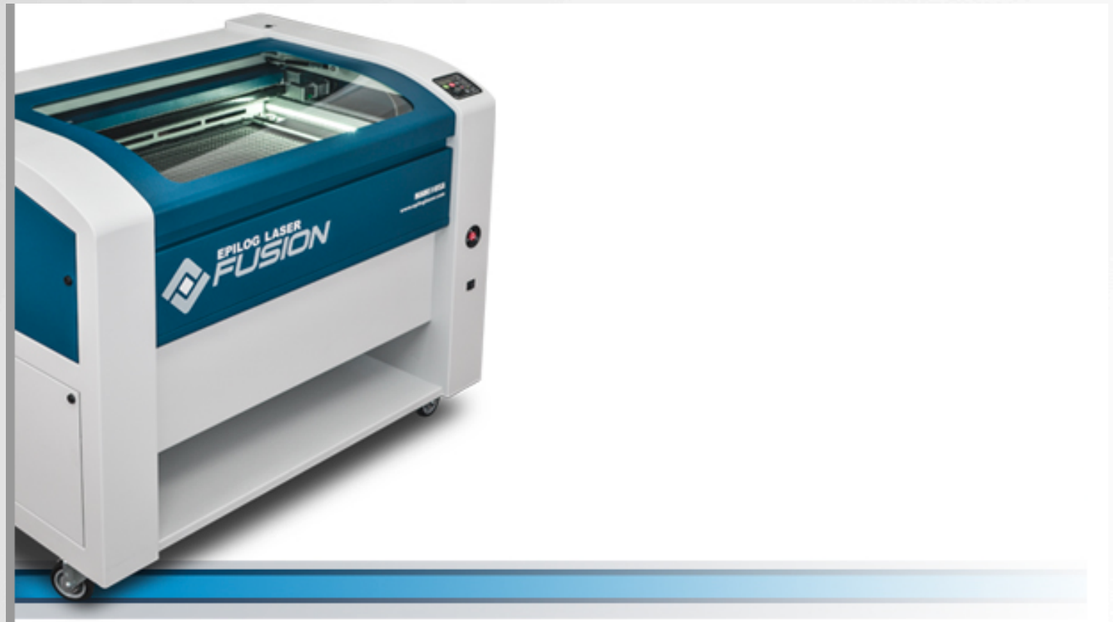
Key learning objectives

At the end of this class, you will be able to:

- Import and slice a 3D model using Autodesk® 123D® Make



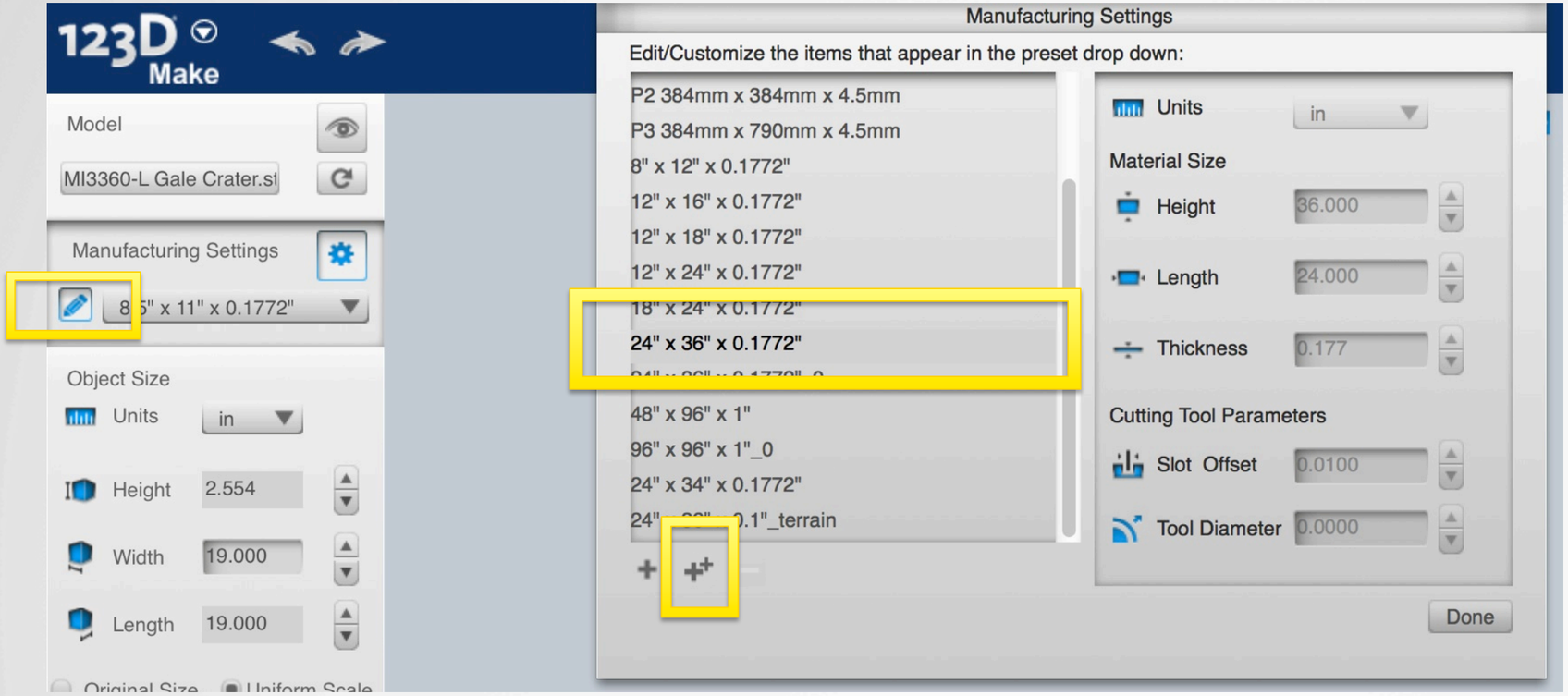
- Launch Autodesk 123D Make from All Programs.
- Click the Import… button.
- Import the file: "MI3360-L Gale Crater.stl"
- We will make our way down the navigation on the left. It will grow with options as we proceed.



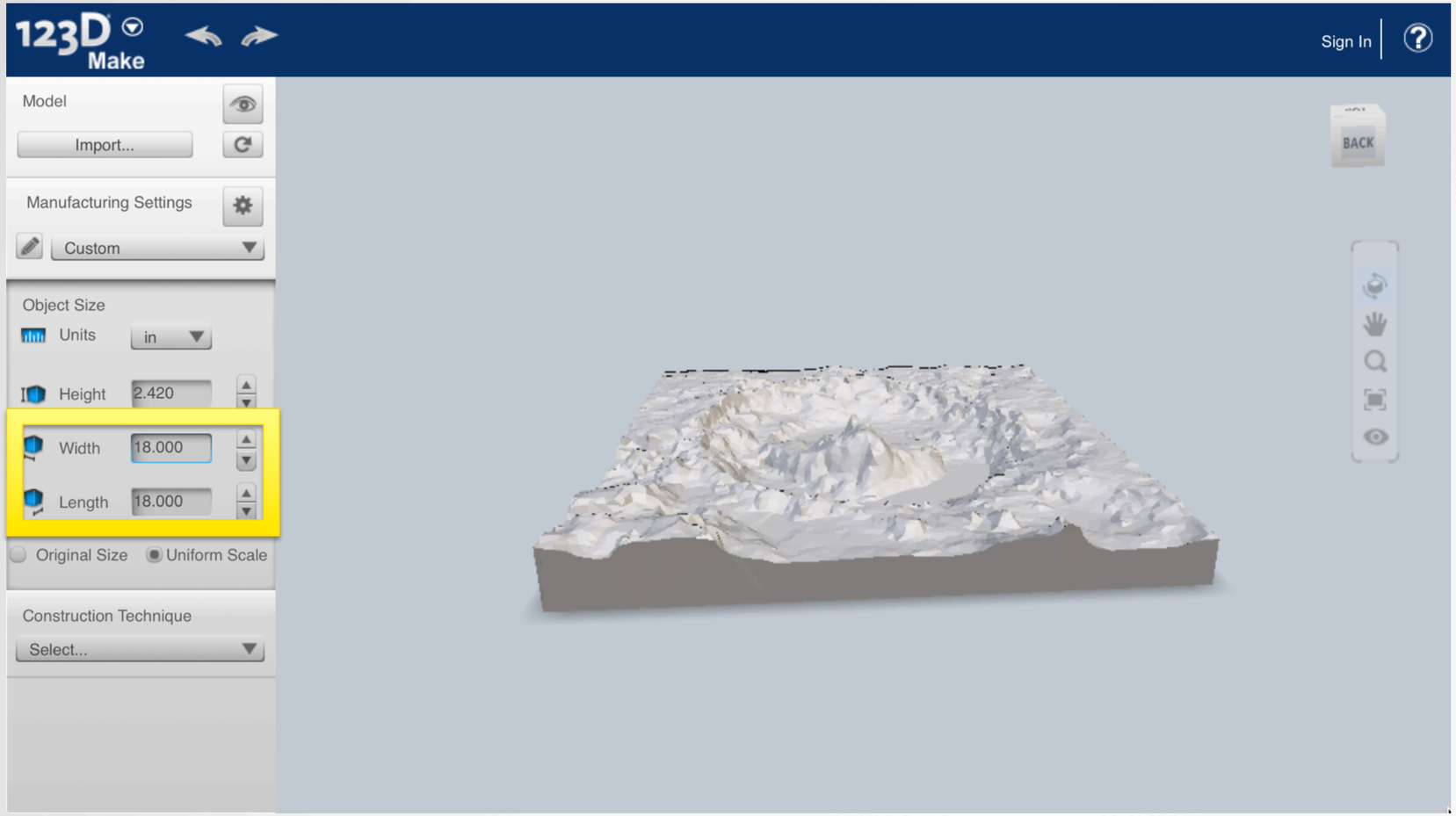
Technical Specifications of the Epilog Fusion Series

	Fusion 32	Fusion 40
Engraving Area	32" x 20" (812 x 508 mm)	40" x 28" (1016 x 711 mm)
Maximum Material Thickness	14.25" (361 mm)	14.25" (361 mm)
Laser Wattage	30, 40, 50, 60 or 75 watts	30, 40, 50, 60, 75 or 120 watts

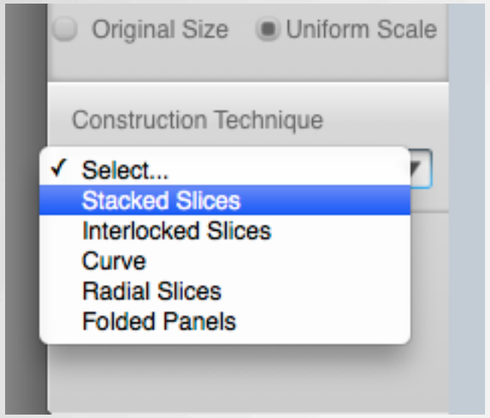
- Before creating the slices, 123D Make needs to know the dimensions of the Stock material to be laser cut.
- The laser cutter at AU will be able to hold stock at least 32” wide x 20” deep.
- On the next slide we’ll create a new material this size.

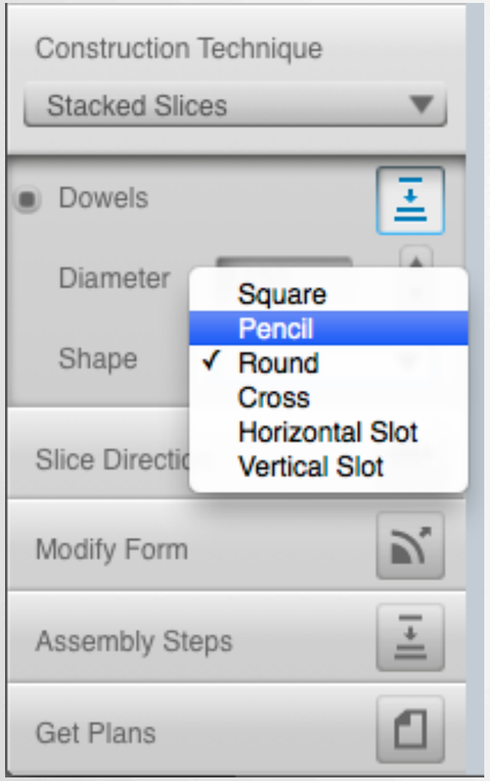


- Click the small pencil under Manufacturing Settings to create a new size of material. A pop up opens.
- Highlight one of the existing presets.
- Click on the ++ icon to duplicate it.
- Fill out the fields:
- Units: in
- Width: 32.000
- Length: 20.000
- Thickness: 0.1772
- Slot Offset: 0.010
- Tool Diameter 0.01
- Click Done.



- The original dimensions of the Gale Crater file are 100” x 100” x 14.4”. This is too big for our laser cutter. 123D make will automatically scale all imported models so their longest dimension is no more than 8”.
- We’d like to go as big as possible but still fit the laser so do a Uniform Scale and set the Width or Length to 18”.
- If the model appears sliced you can click the “eye” icon to view the original model.



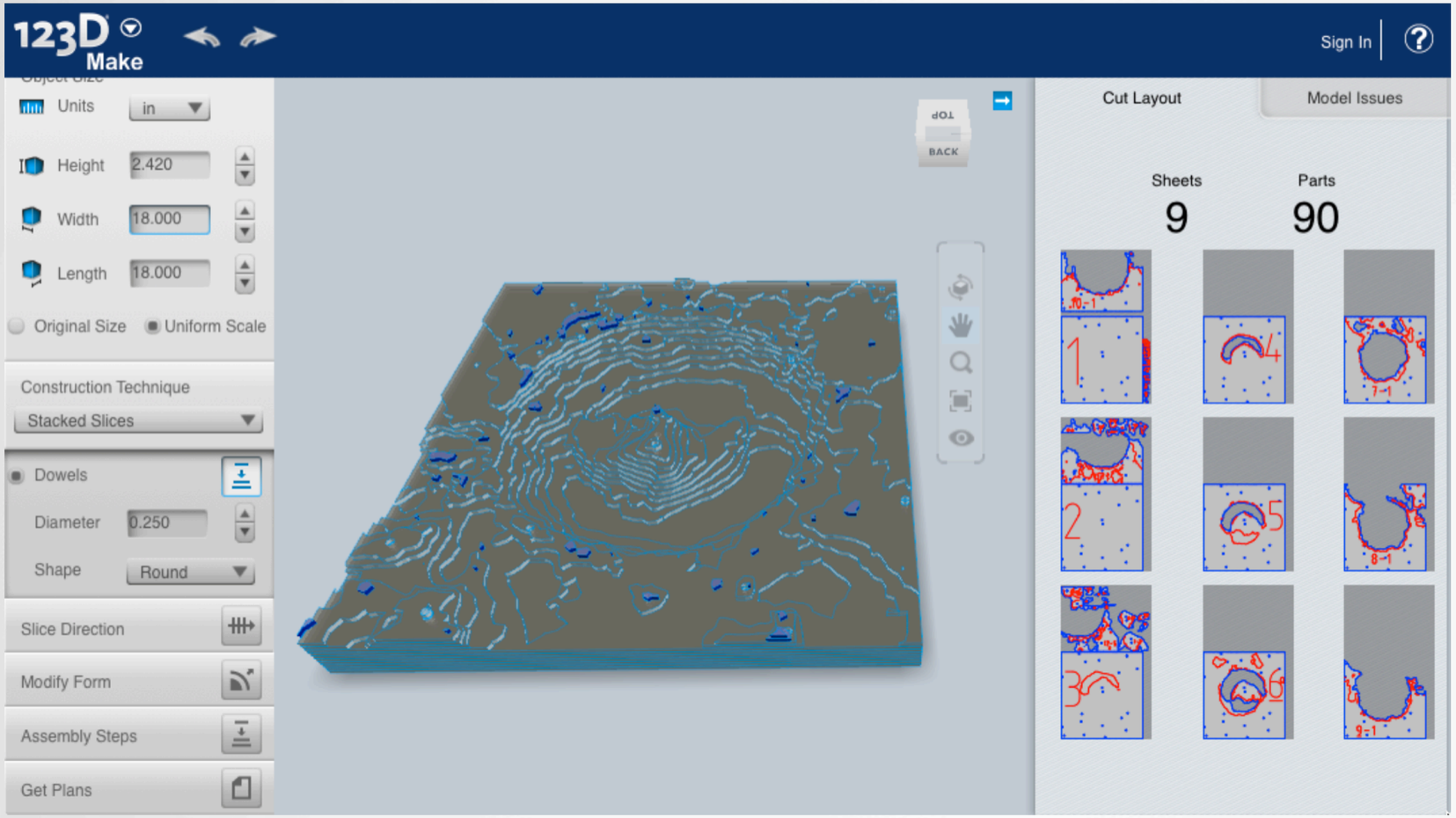


- Slice the model.
- Choose “Stacked Slices” from the “Construction Technique” drop down.

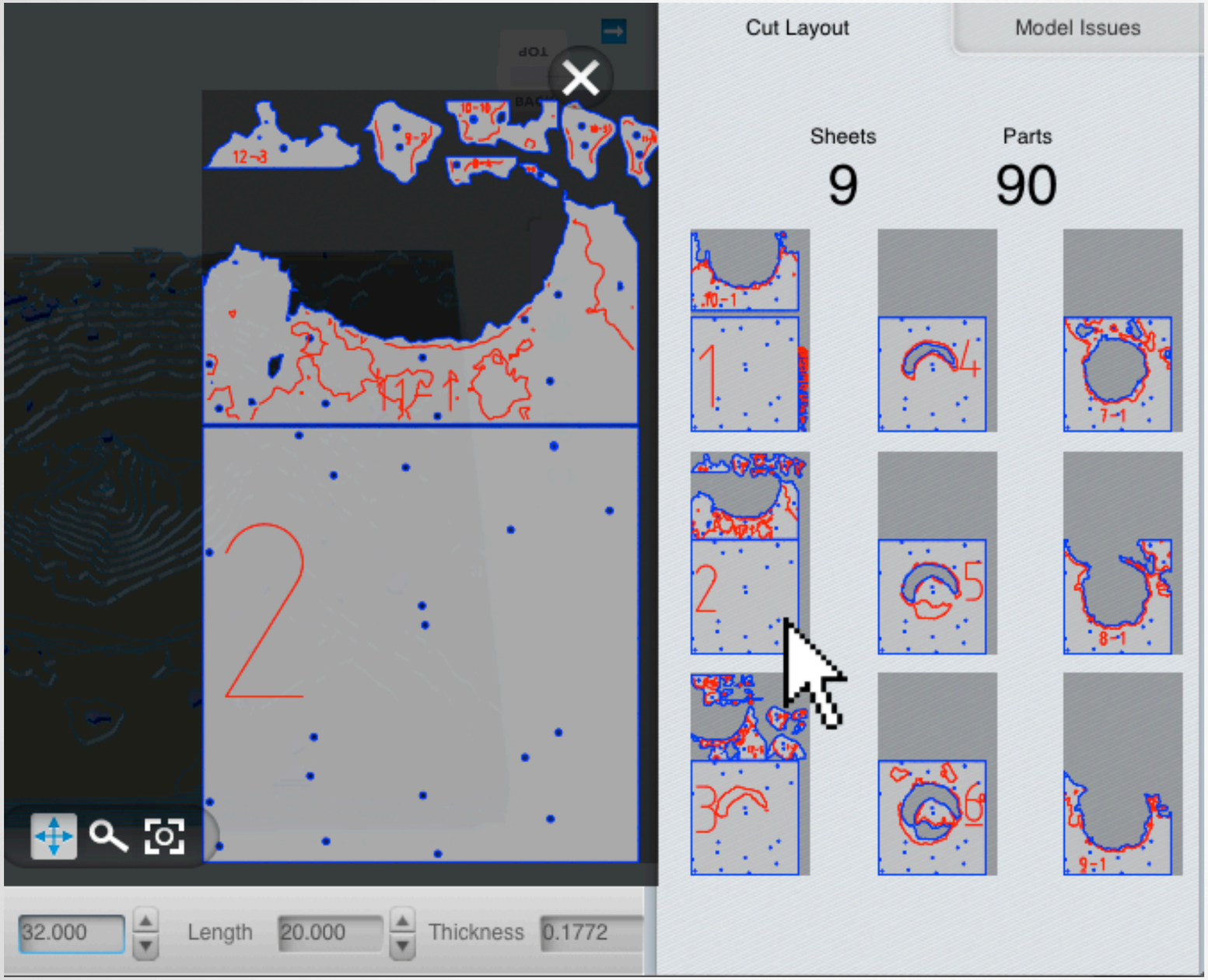
The model will appear sliced and more options will appear in the left navigation bar.

- Click the radio button next to “Dowels” and choose Pencil.

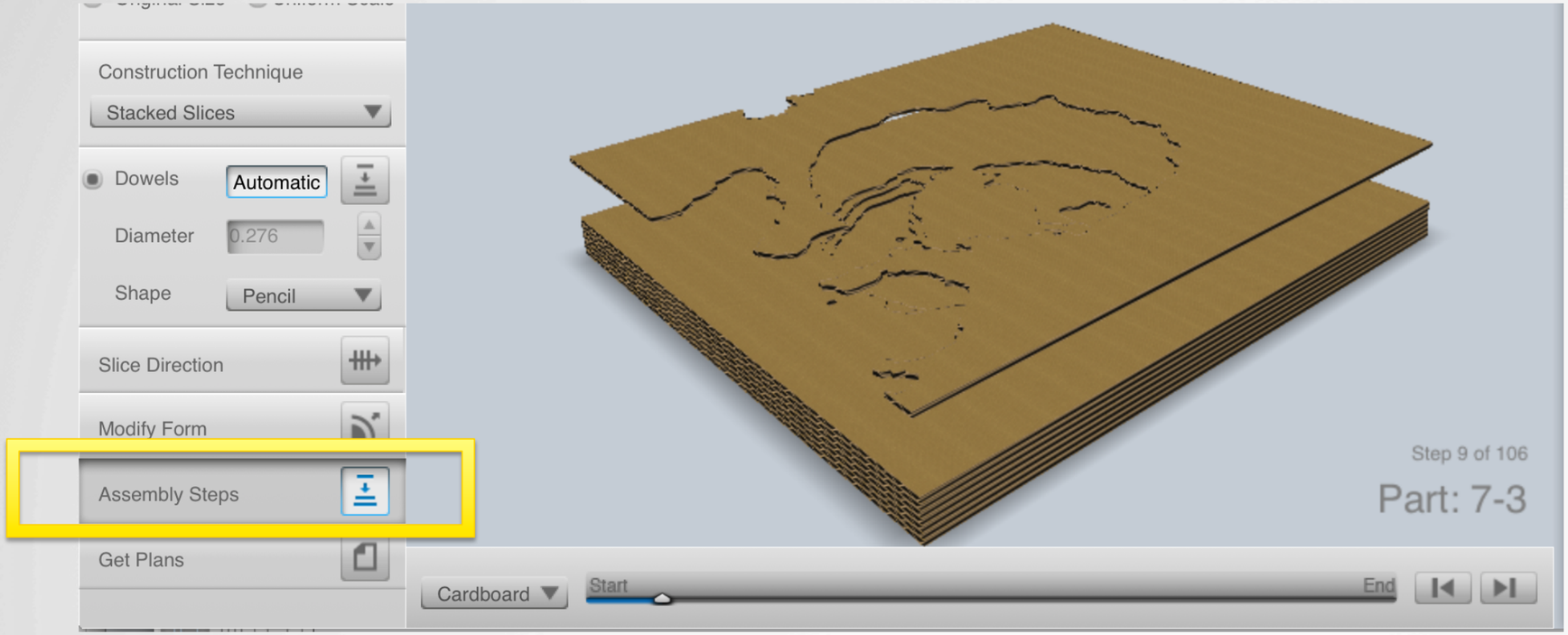
The model is now riddled with hexagonal holes perfectly sized for #2 pencils to squeeze into the holes. These will be handy when stacking the slices back into a 3D object.



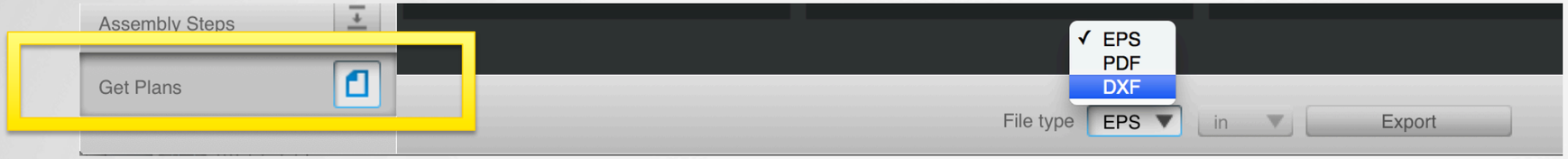
- Look around 123D Make.
- The left navigation is where you set the machine stock size, the size of the imported model, the slicing technique, the slicing technique modifiers, and the output file format.
- The center is the 3D viewport.
- The right pane shows a preview of the Parts and their positioning on the Sheets of stock material. This particular model requires 9 sheets of 0.1772” thick material (i.e. cardboard).

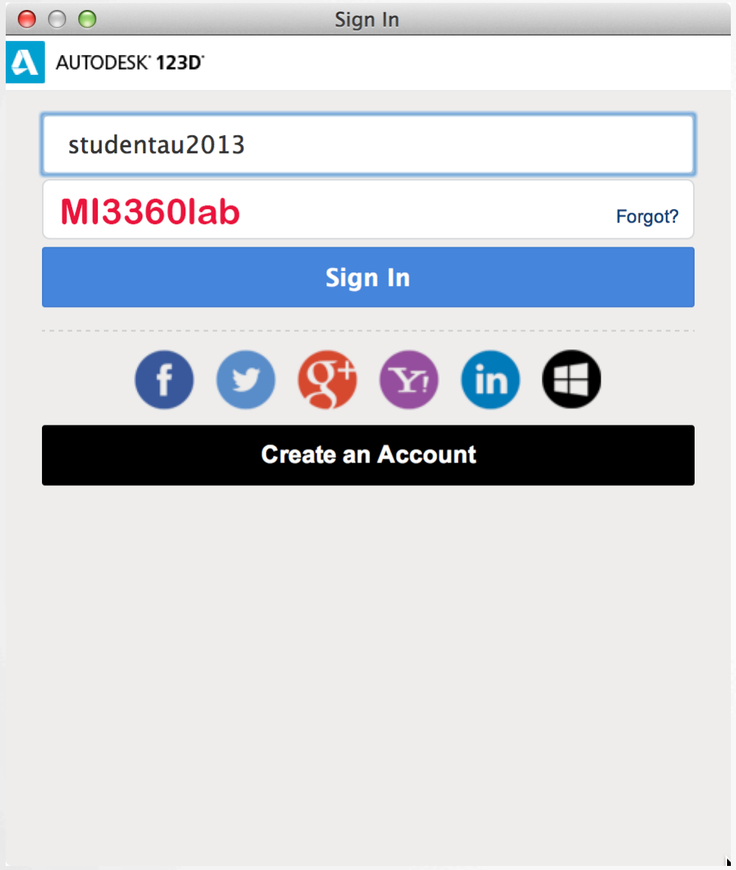


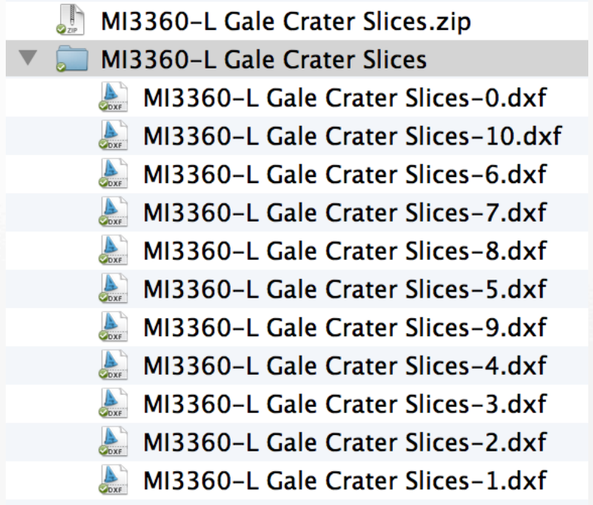
- Click on one of the sheets on the left. A preview will open.
  (yours may look different)
- 123D Make color codes content. Most laser cutters can modulate their power based on color.
- Blue = cutout (full power).
- Red = lower power for light scoring but not cutting.
- When lazing you'd first laze the red, then the blue. That way the parts don't get completely cut out before they've been etched with their assembly order code.



- Please skip Slice Direction for now.
- To see a simulation on how to assemble it – click on Assembly Steps.
- Move the slider at the bottom of the screen to see a step by step animation.







- The final step is to export files for laser cutting.
- Some laser cutter drive rs read files from Autocad®, others from Corel Draw® or Adobe Illustrator®. You have the choice between file types:
  DXF, PDF, and EPS
- For this lab you can choose whatever suits you. The example materials have already been laser cut.
- You might be asked to login. You can use the class account:
  Login: studentau2013
  Password: MI3360lab

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