Engineering Innovation Center
3D printing
The Engineering Innovation Center is a large academic maker space with plenty of tools and equipment. In order to use these items you must have the proper training. This online popup class will teach the basic fundamentals of this tool or piece of equipment.

3D printing—shows the basics of how to submit job files for the larger 3D printers. The key is the right tool for the right job. This class will discuss how to identify and use these tools.
3D Printing Overview

- 3D printing in the EIC is limited to the students of the College of Engineering who have obtained access only.
- 3D prints can be submitted by individuals or by teams
- Certain groups are given a budget for using the EIC’s material for projects
  - Engineering Undergraduates - $25.00
  - Engineering Graduates - $50.00
  - EIC teams (<6 people) - $150.00
  - EIC teams (>6 people) - $250.00
  - The EIC can only print academic jobs. Research must seek other sources.
FDM printing vs. Polyjet printing

- EIC printers use several types of printing technology, fusion deposition modeling (FDM), Polyjet, and stereolithography (SLA).
- Fusion deposition modeling works by heating and extruding thermoplastic filament, similar to a hot glue gun with glue sticks.
  - Advantages: Simple, easy to use, cheaper than Polyjet technology
  - Material is mechanically and environmentally stable
  - Capable of complex geometry and cavities
- Polyjet printing works very similar to inkjet printers, but instead of jetting small droplets of ink, 3D printers print small droplets of UV curable photopolymer onto the print bed
  - Creates incredible fine prints with accuracy to within 20 microns
  - Capable of creating manufacturing parts (molds, jigs, fixtures, etc)
Fortus 250 mc Printer

- FDM printer
- Capable of printing in Ivory, Black, Gray, Red, Blue, Nectarine, and Yellow
- Max Build Size: 254x254x305 mm (10x10x12 inches)
- Layer Thickness: .013, .010, .007 inches
- Accuracy: +/- .241 mm
- Cost of material
  - Ivory ABS: $2.20 per in³
  - Other colors: $2.25 per in³
  - $2 flat rate for replacing modeling base
  - Support material: $4.20 per in³
Eden 260V printer

- Polyjet printer
- Max build size 10x9.9x7.9 inches
- Minimum layer thickness: 16 microns
- Costs:
  - FullCure 720 $.23/g
  - Support Material $.13/g
- Other materials are available at a cost of $.35/g
Objet24 Printer

- Polyjet printer
- Max build size 9.45x7.87x5.9 inches
- Minimum layer thickness: 28 microns
- Costs:
  - VeroWhite $.30/g
  - Support Material $.13/g
• The EIC also has a printer that uses stereolithography to create 3D prints, however use of this printer will be decided by EIC technicians.
How to submit files

• Navigate to http://engineering.tamu.edu/easa/areas/enrichment/eic
• Click on Forms on the right hand side of the screen
• Click on Prototyping Request
How to submit files (cont.)

- Before you submit the file, you must first set up an EIC prototyping account.
- The link is contained within the Prototyping request form.
- If signing up for a team account, you have to email eic.prototyping@gmail.com with a list of your teammates and their UINs as well.
- Getting a prototyping account usually takes 24-48 hrs, so you would have to return at a later time to complete the prototype request form. Once a team account has been created future requests will sail right through.
How to submit files (cont.)

- Be sure to fill out the prototyping request form fully, including your prototyping account
- Briefly describe the part(s) and the correct dimensions of the part(s) to ensure the proper scale.
- Select the material to want to use
- Upload the file(s) to Google drive **making sure that your file is in STL format**
Picking up your part(s)

• Most requests a week to complete based on size, amount of support material that needs to be washed off, and cleaning.
• You will receive an email saying that your part(s) is/are ready to pick up.
• 3D parts are kept in the Machine Shop above the laser cutter.
• Ask an EIC technician to retrieve the part for you.