

Additive Manufacturing

Contest Update – April 1, 2021



Preparatory Information

Supplies and Materials

- 3D design submitted by April 16, 2021 at 5:00 PM EST.
- Design files saved in PDF format
- Engineering notebook
- Electronic presentation tool (i.e., Powerpoint)
- 3D printed testing rig
- Lumber (to attach the rig to)
- USB cord, such as a phone charger (will be used to verify fit only)
- Screws, must be able to fit through a 2.5mm diameter hole
- Student designs 3D printed

Contest Information

Each team must have a testing rig built in advance of the competition.

- The Rig simulates a piece of drywall with the mounting plate protruding out of it.
- The overall dimensions of the rig are as follows: 100mm (long) x 100mm (wide) x 33mm (tall).
- It is recommended that competition host have the rig printed and attached to a flat surface (a piece of lumber or plywood is sufficient).
- The files to print can be found on GrabCAD here: <https://grabcad.com/library/skillsusa-2020-state-challenge-1>

Teams will create a USB outlet redesign according to the specification provided in the contest prompt on April 13.

Teams will submit their design files no later than April 16, 2021 at 5 PM EST. Teams will also submit their Engineering Notebook and at least 3 photos of the printed design (front, back, and side view).

Engineering Notebook should:

- Be clearly labeled with Team, date and page # on each page.
- Begin with a problem statement.
- Include discovery and documentation of approach to solve problem.
- Include sketched design concepts with critical features labeled.
- Critical dimensions clearly labeled in design sketch.
- Considerations for designing for FDM distinctly addressed (i.e., part strength, part orientation) especially including any expected risks during printing.
- Design decisions and alternatives are documented and evaluated thoughtfully.

3D Printed Design - Students must create a design that:

- Prints in less than 3 hours.
- With a build volume of no greater than 3X3X3in.
- Using no more than 5 in³ of build material.
- Using no more than 2 in³ of support material.

Students will present their design live to judges on April 19. Presentations should last no more than 10-15 minutes.

Presentation Criteria:

- The competitor clearly describes their understanding of the problem to be solved.
- Design Process: good design logic is used for key design choices was intentional and well-communicated.
- Practical evaluation: Part functions way team intended 100% of time. Teams are expected to demonstrate their design during the live session.
- The presentation is professional and well-rehearsed, and both team members participate in the presentation.
- Teams must prepare and utilize an electronic presentation tool, such as a Powerpoint.

Submitted files must be in the designated format and named according to the [Virtual General Regulations](#).