

3D PRINTING

ADDITIVE PROCESS CHALLENGE 2026

John Zehren
S.C. Johnson iMET
Center

2320 Renaissance Blvd
Sturtevant WI

Gtc.edu/fablab
zehrenj@gtc.edu



We are America's Future Skilled Workforce

SKILLSUSA WISCONSIN IS DEVELOPING THE NEXT GENERATION OF WORLD-CLASS CHAMPIONS AT WORK

Challenge – MAKE SOMETHING

The 3D printing challenge this year is to simply “Make Something.” There are no restrictions as to what you make, which you may find deceptively difficult. For this project you must challenge yourself and determine what your project’s build parameters will be. This will present you with the opportunity to explore additive manufacturing and connect it to something you find personally exciting or important. Furthermore, your project should reflect the relevance and importance of 3D printing and it’s continuous evolution.

Objectives:

- 1) Promote creativity.
- 2) Learn how to use 3D modeling software.
- 3) Exhibit design and troubleshooting skills.
- 4) Adapt to necessary changes from design to physical print.
- 5) Document from design inception, troubleshooting, revising design, and printing.

Summary:

Advanced manufacturing has transformed the environment in which we live and work. Culture and manufacturing are now integrating 3D printing into everything we do. How do we use printing not just to make something but to show us better ways to approach our design and product?

Conceptual:

Projects can be anything but here are some potential starting points:

- Make something cool.
- Make something unique
- Make something useful.
- Make something artistic.
- Improve an existing item.

Things to consider:

Once you have figured out what you want to do, here are some things to think about:

- What purpose does your project serve?
- Is your product unique and if not, how is what you’re doing different or better?
- Does your project have value aesthetically?
- Is your project viable from a manufacturing or marketing prospective?
- Does your project have design integrity, and is it crafted well?

- Is what you make important?
- What does doing this teach you about your own limitations?

Key ideas

- **Technical Ability:** How does your project show off your technical expertise, and your understanding of the fundamental concepts involved in 3D printing?
- **Digital transformation:** How is your project different because it was printed? MIT started Fab Labs as educational spaces to explore the changes computer driven manufacturing has brought. Nothing illustrates this better than 3D printing. You must attempt to demonstrate this concept in your project.
- **Cultural Evolution:** 3d printing defies being limited to one or two disciplines but can be used anywhere. Strive to show us an unusual and unexpected application.
- **Creativity:** The simple act of creation not only inspires but inherently presents teachable moments. What are the things you discovered as you developed your project?
- **Innovation:** Trying something new teaches us decision making which is vital for successful execution of our projects. How is your project innovative. What is it you tried that hasn't been done before?

Platform:

- You may use any printer or any printing process, however, you must be prepared to defend your process decisions in relation to your project.
- You are expected to design and print your project ahead of time.
- You should document your project's evolution from the very beginning, including your inspiration and various failures or iterations, up to the final project presented.
- Physical presentations, along with projects, will be displayed on a 24" by 36" tabletop area at the Competition.
- You will have a final critique, where you will be required to present on your experience and project to a group of judges.
- Presentations are spoken, but can incorporate any media you deem relevant, including visual aids, electronic and social media.

Scoring

Actual Project	30 percent
Project Documentation	30 percent
Technical Ability	20 percent
Table Presentation	10 percent
Innovation	5 percent
Creativity	5 percent

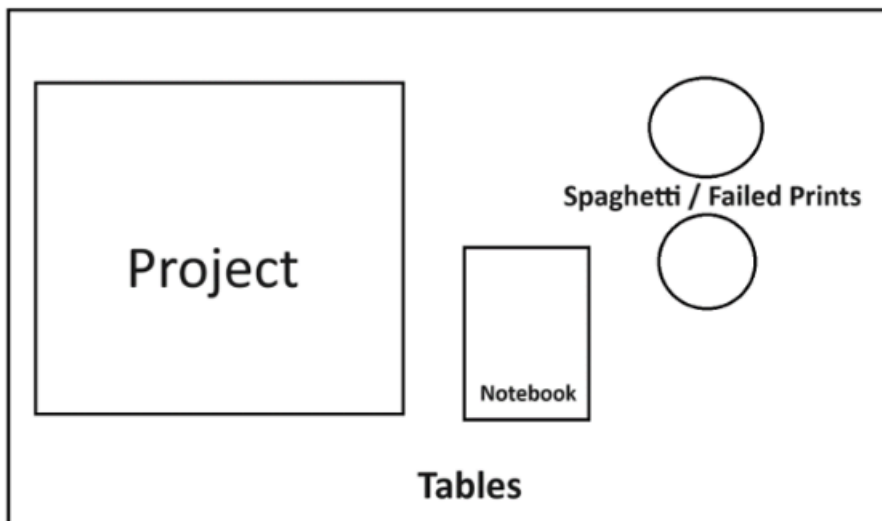
CHALLENGE RELATED RULES AND REGULATIONS

- *Your presentation will need to be submitted no later than **March 30th to:** Skillsusa.3dprinting@gmail.com or zehrenj@gtc.edu This way judges can review and come up with questions ahead of time.*
- Please include completed STL designs
- Include print process settings and any relevant media such as digitized notebooks (PDF or JPG) PowerPoint presentations or social media clips.
- Scans from a copier or pictures from a cell phone are allowed. Please number the images if phone images are supplied.
- The following items should be brought to the competition for judging:
 1. Printed Piece
 2. Model iterations or any failed print
 3. Physical Notebook

COMPETITION Day 1 Expectations: Day 1, each

contestant will:

- Bring in their finished design and presentation materials and place them on a table provided.
- Contestants should check with staff for special display considerations.
- Judging will commence day one starting at approximately 2:30PM and running till about 5:00 PM.



- Contestants should check with judges when they are ready. Judges will set a time to come to their table setup and hear contestant presentations.

Each contestant will be given 7 to 10 minutes to present their project. This includes describing the inspiration, design, difficulties, and troubleshooting. The judges will ask questions about the project, the finished print, and general questions. Contestants are welcome to stay and hang out to chat with the judges and other contestants.

COMPETITION Day 2 Expectations: On Day 2:

- Presentations/Interviews will be conducted from 8:00 AM till 2:00 PM.
- After all the presentations, Projects should remain till after the awards ceremony.
- The judges will deliberate and decide the winners.
- Winners will be announced at the awards ceremony.
- Feedback session after awards. Contestants will be allowed to ask for feedback from the judges in respect to their decisions and criteria.
- Projects are released for removal.

Model Size and Specifications

- Size: There are no restrictions on model size this year, however contestants should keep in mind their allotted space, 24” by 36” and the negative impact of an unfocused or an unnecessarily cluttered presentation.
- Multiple components are allowed; however, they should be in their final configuration for presentation. You will also need to defend this choice in your presentation.
- Filament: There are no restrictions on filament or resin or other medium, however, participants must explain their decisions in their presentation.
- Movement and Interactions: Movement is not required but can increase scores in terms of complexity. However, having a mechanism fail will count against your score.

- Slicing Your Model: You may be asked about how you sliced your model or the various iterations. Here are some of the potential elements you should know:
 - Layer height (gain or lose details),
 - Support settings and removal (can it be done cleanly),
 - Wall count (will it be flimsy or too heavy)
 - Overhang or undercut solutions
 - Bridging or other Experimental settings
 - Infill
 - Printing time and cost

OTHER CONSIDERATIONS

Paint, stickers, glue, welding, fasteners (excluding printed pieces), liquids, motors, lights, LED, speakers, batteries, laser, screens, LCD, Arduino, IoT, raspberry pi, or programmable components are not counted as part of your 3D print and may work against you.

This challenge is intended to be an exploration of creativity and 3D printing. It does not encourage printing weapons of any sort. While there is a place for the development of weapons, this competition is not it. We greatly appreciate your understanding and cooperation in this. Projects designed as weapons will not be looked upon favorably.

Projects that do eject projectiles that are round in shape and have no fine points are allowed if they do not move more than 2 feet from the exit point. Projects with projectiles will be displayed away from other projects and people.

Documentation Suggestions

- Notebooks should be Composition Size 9" x 7" or larger.
- Document decisions must be defended in your presentation.

- Should have a description of the project, inspirations, initial concerns, design revisions,

notable failures, lessons learned and finished design notes.

- Dates and revision numbers are suggested.
- Notebooks should be handwritten and legible.
- Drawings should be isometric or 2D with notes and a scale reference.
- Printed screenshots are allowed to be pasted into the notebook.
- A bill of materials should be included in the notebook.
- Print settings should be included for each component or iteration.
- It is recommended there should be between 5 and 10 pages of notes.
- Unnecessary notes to make the notebook longer reflect poorly on a notebook's integrity.
- The failed print. Anyone who 3d prints knows the dreaded "ball of spaghetti" print failure. It is suggested that each contestant bring a partial, or failed print. Descriptions of why the component failed or the circumstances around the piece should be noted.

Thank You!

Technical Chair and participating Judges want to see a contestant's thought process. How did they work, design, and overcome obstacles, to create their final project. Final outcome should be FUN! and generate excitement about what is possible.