SkillsUSA Additive Manufacturing Contest

Design Challenge: Catapult

Objective:

Design and fabricate a catapult capable of launching a ping pong ball within a range of 3 to 6 feet to hit a skee-ball type target. The target will have separate point values assigned to different areas. Each team will be given five practice attempts followed by three attempts to be officially scored.

Design Requirements:

1. The catapult must fit within a 3" square footprint and have a maximum height of 4 inches.

2. The design should be optimized to ensure efficient time and material usage.

3. Teams have a maximum of 4 hours for printing the components.

4. Material usage must be reported and should include both model and support material consumed.

5. Design should utilize the most efficient time and material usage possible

Competition Guidelines:

- Design Phase (Pre-Competition): Teams will submit their complete design files along with any optional documentation as previously outlined.

    o   Design submissions should contain the following:

        ▪   Full assembly drawing

        ▪   Exploded assembly drawing w/ parts list

        ▪   Separate technical drawing sheet of each part in the assembly

- Presentation: Teams will present their design process, problem-solving strategies, and execution plans to the judges. They will be scored on their understanding of the problem, professionalism, use of presentation tools and visual aids, and team functionality.

- Design Notebook: Design notebooks will be evaluated based on how well they convey design decisions, concepts, sketches, calculations, plans, conclusions, potential design changes, and other notes related to the design plan and results.

- Part Performance : Each team will have five practice attempts to fine-tune their catapult's performance and aiming accuracy. Teams will then have three official scored shots. The points will be based on the accuracy and precision of hitting the skee-ball type target. Separate point values will be assigned to different target areas.