

2023 SkillsUSA Additive Manufacturing Contest

Purpose To evaluate each contestant's preparation for employment and to recognize outstanding students for excellence and professionalism in Additive Manufacturing.

Clothing: Official Skills USA contest clothing. The official Skills contest clothing is Skills USA white polo and black pants, black belt, black socks, and black shoes.

Requirements: Each team is responsible for bringing their 3D printed model to the competition. Models must adhere to the contest outlines from the proposed standards. Models will not be printed on site. Teams without models, or with models that were not created with the recommended Additive Manufacturing methods, will have points deducted from the presentation portion of the competition.

Equipment:

Note: All contestants must bring their own computer hardware and ensure that their computer has the capability to run their software. Slicing and CAD software should be installed and tested before coming to the contest. No internet access will be available. Teams unable to slice competition model in front of contest personnel will have points deducted from their final score.

Appropriate licensure is required for all software. All schools should bring an extension cord and surge protector.

PLEASE NOTE: Students will not be given the opportunity to modify their design at the competition. The computer and software are tools to help students demonstrate their understanding of CAD software and the designed part. If the student cannot explain the use of the CAD software to the judge's satisfaction, points will be deducted in their final score.

2023 SkillsUSA Additive Manufacturing Contest

The goal for the 2023 District 6 SkillsUSA Additive Manufacturing competition is to prepare students for the State competition that will focus on additive manufacturing design with strict requirements on form, fit, and function. The contest below has been designed with the State competition in mind. This competition will prepare students for competing at State and challenge their understanding of additive manufacturing.

The ABC train company Would like to introduce a new line of toy trains. They require a full train set for this contract.

LINK TO TRACK <https://grabcad.com/library/straight-3>

LINK TO MUSIC WIRE <https://www.hobbylobby.com/Crafts-Hobbies/Hobbies-Collecting/Tools-Blades/Music-Wire--0.047%22/p/97976>

Link to fuel <https://www.homedepot.com/p/Vigoro-0-5-cu-ft-Bagged-River-Pebble-Landscape-Rock-54250V/100558618>

Link to cargo cube <https://grabcad.com/library/cargo-cube-1>

Because axles are extremely hard to print you will receive 12 inches of music wire. You may test with your own wire but you must use the wire provided at the contest.

The Great Train race

This contest is focused on creating a complete train set Engine, Cargo car and a Caboose.

LOCOMOTIVE

- The Engine/locomotive must resemble a steam train and connect to either the Cargo or the Caboose
 - The locomotive uses coal/fuel load approximately 1/8 of a cup of fuel in the locomotive
- Wheels must attach to .047 music wire provided
- Wheels must fit in the track and roll
- The finished product may not exceed 3x3x3
- The finished product may not use any fasteners or adhesives
- The finished product must be 3D printed.

Cargo car

- The cargo car must attach and detach from the locomotive and Caboose
- Wheels must fit in the track and roll
- Wheels must attach to .047 music wire provided
 - Cargo module should hold a minimum of two 1x1 inch cargo pieces.
- Wheels must fit in the track and roll
- The finished product may not exceed 3x3x3

- The finished product may not use any fasteners or adhesives
- The finished product must be 3D printed.
- The finished product may not exceed 3x3x3

Caboose

- The Caboose must attach and detach from the locomotive and Cargo car
- Wheels must fit in the track and roll
- Wheels must attach to .047 music wire provided
- Wheels must fit in the track and roll
- The finished product may not exceed 3x3x3
- The finished product may not use any fasteners or adhesives
- The finished product must be 3D printed.
- The finished product may not exceed 3x3x3
 - The finished product must have at least one moveable component which was printed in place

On contest day, students must provide to judges:

- 3D printed models
- CAD model
- 3D printing slicer of student's choice
- Presentation of design and show functionality of the soda can table.

On contest day students will be required to demonstrate the following skills.

- Open their contest model in an approved CAD format (.stp, .ipt, .sldprt, .asm, etc)
- Convert file from CAD format to an STL file
- Slice file with settings provided by contest personnel

Knowledge test:

A knowledge test will be administered during the competition to test the students understanding of additive manufacturing and general CAD knowledge.

For questions pertaining to the competition, please contact Joe Rizo

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