ELIGIBILITY
Open to active SkillsUSA members enrolled in programs with precision machining, automated manufacturing or CNC as the occupational objective.

Contestant number must be visible at all times

Contest will be virtual. You will be notified of date and time.

CLOTHING REQUIREMENTS

Contest Specific – Machining

- White crew neck short-sleeved T-shirt
- Work pants or jeans,
- Leather or steel toed work shoes.
- Hair must be contained.
- Safety glasses with side shields or goggles, (Prescription glasses can be used only if they are equipped with side shields approved by OSHA (Z-87). If not, they must be covered with goggles.)

Objective
1. To have every contestant complete the contest.
2. To have each contestant use their critical thinking and problem-solving abilities in the contest.
3. To have each contestant illustrate good programming and machining related skills.

Guidelines:

Your success on this project is based upon the following criteria
1. Providing complete documentation of the math related to creating the code.
2. Asking good questions and communicating with the judges throughout the contest.
3. Proper use of the technology.
4. Effective planning of project and reading the print.
5. Safe programming moves in the manufacturing process.
6. Efficient use of time, materials, and resources.
Contestant Guidelines:

1. Contestants cannot use the Intuitive Programming System or the Visual Programming System, only G & M code style programming.
2. The Haas simulators should not have any tool or work offsets in its memory. Students or teachers will need to prove this to the Chairperson.
3. The Contestant cannot confer with other teachers, visitors, or watchers, but contestants may ask questions of the judges. It is highly recommended you seek out your answers on your own first. Remember...communicate with the judges.
4. Restroom breaks are allowed. Notify chairperson or judges.
5. IN THE CASE OF A SOFTWARE, HARDWARE, OR A MACHINE FAILURE PROBLEM: The contestant will communicate the problem to the judges so that the running time clock can be stopped for that contestant. In the case of a stopped time clock, all work will stop for that contestant until the problem is solved.
6. Cell phones must be turned off and left with the teacher.

Contest Organizational Flow & Additional Information:

1. The contestants will be given a print of a part and need to manually write and verify a G & M code CNC program(s) without the use of CAM software according to print specifications, dimensions and cutting tools allotted. Competitors have the opportunity to edit any program errors on the simulator at any time during the competition.
2. Contestants are to use an initial point of 0.75 inches. This is the rapid location from machine Z zero or the tool change position to the Z start position used in the tool offset block.
3. Upon receipt of the print, the contestant can start programming. It is recommended that the contestant be ready to write on blank paper any math and keep their print clean from any writing.
4. Notes to include in the program are what a setup person would need if you, the programmer, were not available to answer questions.
5. The contestant will generate tool paths and verify them to ensure the machine code works as anticipated. Code editing may be done at any time.
6. Run the features of the part(s) in GRAPHIC MODE only. No running of the CNC machine is allowed.
7. Contestants will need to use multiple cutting tools to complete this project. Knowledge about 90-degree spot drills may be beneficial.
8. Judges may ask to see programs, ask about how you are planning the operations or ask you to verify programs at any time. This will enable judging to go smoother and fair. Be ready to discuss your work with the judge at any time so everyone’s time is utilized well.
9. All note taking papers for student use must be blank prior to the start of the competition.
10. The contestants’ individual time will stop when Chairperson calls the end of the competition. You will have 1 ½ hrs to work program.
11. There will be a written test that the student will have 30 minutes to complete.
EACH CONTESTANT/SCHOOL MUST SUPPLY:

1. One Haas Mill Controller, either on a machine or a simulator. The control can be a classic control or a New Generation Control.
   - With all work and tool offsets set to ZERO
   - No programs in memory
2. A USB flash drive to save and email programs – Instructors please make sure YOU are able to complete this operation for the student.
3. Pens and pencils
4. Paper for calculations and note taking – turn in all notes
5. Scientific non-programmable calculator. No machinist calculators allowed.
6. Reference material to be used is the Machinery’s Handbook or the Haas machine manual that came with the simulator can be used without penalty. No workbooks or school/classroom notes allowed.

Topics that may be judged during the contest can include

Circular interpolation
Speeds and feeds
Cutter compensation
Drilling, boring and tapping
Locational moves including absolute and incremental moves
Proper machining choices and skills
Followed guidelines