



Regional 2020-2021 Contest Catalog

CNC TECHNICIAN (Virtual)

Contest Description

The purpose of this contest is to evaluate whether each contestant can independently plan and program jobs and provide instructions for 3-Axis Computer Numerical Control milling machine and turning center operators to execute. In addition, to recognize outstanding students for excellence and professionalism. This contest is open to active SkillsUSA members enrolled in programs with precision machining automated manufacturing or CNC as the occupational objective.

Regional Competition

Students will compete in this competition live over the Zoom platform on **Saturday, February 6th and Sunday, February 7th**. Students should be ready to compete at their scheduled time. Resumes must be submitted to SkillsUSA California by **Saturday, January 30th**.

Knowledge Performance

The contest will include a written test to evaluate a contestant's knowledge of Computer Numeric Control milling and turning programming in such areas as: safety, materials, measuring and test equipment, applied mathematics, engineering drawings, geometric dimensioning and tolerancing, machine technologies, controls navigation and maintenance, mechanical design, cutting tool and holder technology, computer operations and software technologies.

Skill Performance

The contest will assess the ability to write CNC milling and turning programs, interpret prints (including GDT), and measure/gauge parts. Participants also will demonstrate theoretical knowledge of CNC machine configuration, setup and operations.

All SkillsUSA California contest projects are subject to change due to any unforeseen facility, staffing or site-related issues. Please use these materials as a reference to prepare students for the potential contest project. SkillsUSA California regional and state contest projects are developed by state technical committee members to align with the national technical standards.



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Contest Guidelines

1. Each contestant will be given dimensional drawings to program a part on a CNC program.
2. Programming
 - a. Write and verify CNC programs without the use of CAM software
 - b. Display complete knowledge of programming (G and M modes)
 - c. Apply the correct use of cutter compensation (G41/G42)
3. Perform mathematical calculations
 - a. Calculate CNC speeds and feeds
 - b. Calculate programming coordinates from the drawing
 - c. Calculate radius tangent points
4. Measuring
 - a. Measure sample parts within 0.005"
5. Communication
 - a. Read and interpret technical prints
 - b. Understand all symbols on technical prints, such as geometric controls, surface-finish symbols, corner-break symbols, etc.
6. Dimensions

This is a contest of programming skills. Contestant parts will only run on machine if programs run without violating safety standards or damaging machines.
7. An overview of a CNC machine will be available for orientation before the competition with technicians on hand to help

Note for Virtual Competitions: Contestants may not be required to perform all the standards and competencies listed above. However, contestants should be prepared to perform components in all areas. The technical committee will determine if additional information is needed for contestants prior to the competition. These changes will be posted on the SkillsUSA Championships contest update website at: <http://updates.skillsusa.org>.

The CAM Software will be considered demonstration only and will not be scored. Please refer to the National Technical Standards updated on 11/18/20.

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Materials Supplied by SkillsUSA CA

- Access to a virtual computer with CAM software
- Access to NIMS Testing Center

Student Materials List

- One page Resume (SkillsUSA format)
- Computer with pre-installed CAD/CAM software
- Scientific calculator
- Pencils and paper
- Machinery's Handbook (optional)
- Computer with high-speed internet capability and camera to use applications such as Zoom. The minimum recommended internet bandwidth speeds for joining Zoom meetings, accessing on-demand curriculum and other online operations is 2.0 Mbps up and down. You can test your current internet speeds by following this link: <https://www.speedtest.net/>. Allow the page to load and click on GO.

Clothing Requirements:

Official Dress is NOT required for Regionals. Clothing must be unbranded with no words, images, or logos. SkillsUSA or SkillsUSA California attire is recommended.

Note: Check the National Contest Guidelines and/or the updates page on the SkillsUSA website and the SkillsUSA California Competitive Events page:

- www.skillsusa.org/compete/updates.shtml
- <https://www.skillsusa.org/competitions/skillsusa-championships/contest-descriptions/>
- <https://www.skillsusaca.org/competitive-events-2>

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