



# CNC PROGRAMMING COMPETITOR RESOURCES

[Haas Automation](#), [Mastercam](#), [Autodesk](#), and [Zeiss](#) sponsor the SkillsUSA CNC Machining competitions. A Technical Committee comprised of individuals from these companies is committed to providing materials for [Regional and State competitions](#) throughout the United States for the 2026 CNC Machining competitions. These materials are intended to help states [run their Regional and State CNC competitions](#).

In addition, we are providing a list of resources to help prepare students to enter CNC Machining competitions and our industry's workforce, feeling well-equipped for success. Please see the following pages for resources.

For state-specific competition updates and other questions related to your state or local event, visit your SkillsUSA association website or [reach out directly to your association director](#).



Haas Automation, Inc. | 2800 Sturgis Rd. Oxnard, CA 93030

**Sponsor of SkillsUSA CNC Competitions**

CNC Programmer | CNC 2-Axis Turning | CNC 3-Axis Milling | CNC 5-Axis Milling Programmer

# About the Competition:

The CNC competitions are comprised of 4 separate skills that the student can test in:

1. CNC 3-Axis Milling (regional and state competitions)
2. CNC 2- Axis Turning (regional and state competitions)
3. CNC Milling Programmer (regional and state competitions)
4. CNC 5-Axis Milling Programmer (State level only)

These Competitions test three major skills areas:

- (1) CNC theory test
- (2) CAM programming
- (3) Metrology

## CNC Theory Test:

The CNC theory test is a set of multiple-choice questions closely related to the competition's CNC subject area of focus, i.e., milling or turning. Competitors must select the best answer that applies, reading each question carefully before choosing an answer.

## Programming:

The programming portion of the competition will provide competitors with access to a part drawing, a part STEP model, and a Datasheet. The drawing will be complete with multiple views, making it easy for competitors to visualize the part and understand its geometry. It is the competitor's job to use the documents provided to complete a CAM program. If the part was to run in a machine, the program would produce a machined part that is collision-free in accordance with the Data Sheet and accurate to the part drawing provided. The Datasheet will provide general setup instructions and tool data. Contestants **must** use the tool data provided on the Data Sheet. Contestants will submit their CAM file (NOT NC Code) to the judges.

Contestant numbers must be used as the naming convention for the saved CAM file. If this step is missed, the competitor will be penalized. Remember, save early, save often.

Competitors will be provided with all testing documents mentioned above, but **competitors must provide the following items to compete successfully.**

- (1) (Required) Laptop or PC with access to CAM software (Mastercam or Autodesk Fusion)
- (2) (Required) Pen or pencil for notes or written calculations
- (3) (Optional) Basic calculator
- (4) (Optional) Machinist Handbook



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## Metrology:

The metrology portion of the competition will consist of individual measurement stations. The competitor must be able to utilize the instrument and write down the measurements on the answer sheet.

# Recommended Competitor Preparation

Set yourself up for success by committing to continuous learning. Haas Automation and other supporting partners offer an array of opportunities for everyone to learn about the principles of CNC machining. Get ahead by preparing yourself as a competitor before and after competitions.



## Haas Certification Program

These online courses are designed to provide the basic knowledge necessary to get started as a CNC machine operator or CNC machinist. They introduce basic CNC machine operation, proper machine safety, and fundamental machining processes. For more information and to sign up for the free online courses, visit: <https://www.learn.haascnc.com>

## Haas Programming Workbooks

These programming workbooks provide the basic principles to program Haas Mills and Haas Lathes. Numerous exercises throughout the workbook enable users to build their skills at their own pace. Answer Books are also available. To download, visit the Haas Learning Resources webpage:  
[https://www.haascnc.com/myhaas/Haas\\_Learning\\_Resources.htm](https://www.haascnc.com/myhaas/Haas_Learning_Resources.htm)

## Haas Video Library

The Haas Video Library gives you access to thousands of videos recorded specifically to help Haas CNC users everywhere grow their skills and understanding of CNC machining to maximize their abilities. Access videos directly from the Haas Video Library via the Haas YouTube channel or using the Quick Picklist of the Haas Learning Resources page, which organizes a handful of entry- to advanced-level videos to help get you started. For the complete Video Library, visit:  
<https://www.haascnc.com/video.html> Or, for the shortened Quick Picklist, visit:  
[https://www.haascnc.com/myhaas/Haas\\_Learning\\_Resources.htm](https://www.haascnc.com/myhaas/Haas_Learning_Resources.htm)



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## CAM Programming Training and Software

Partners Mastercam and Autodesk Fusion provide access to software and video training programs. Please visit the links below for information on accessing software and training resources.



**Mastercam Learning Content:** <https://my.mastercam.com/hubs/learning/>

Sign up for a myMastercam account to access courses in Core, 2D Mill, 3D Mill, Lathe, Multiaxis, and more. Please be sure to use a .EDU or .ORG email address to gain full access to courses.

**FREE Acoustic Amplifier Project-Based Tutorial:** <https://signup.mastercam.com/project-part-series-1-amplifier>

**FREE SkillsUSA Milling Prep Lesson from camInstructor:** [Sign Up Here](#)

**FREE Mastercam Software Access for SkillsUSA:** <https://www.mastercam.com/skillsusa/>

**Contact Email:** [education@mastercam.com](mailto:education@mastercam.com)



**Autodesk and SkillsUSA:**

Information on how Autodesk supported SkillsUSA Manufacturing competitions last year (to be updated ahead of NLSC).

<https://www.autodesk.com/campaigns/education/skillsusa>

**Download Autodesk Fusion:**

Autodesk Fusion is an all-in-one integrated CAD/CAM/CAE software that is **free for students and educators**. Available on Mac, PC, and Chromebook.

<https://www.autodesk.com/campaigns/education/fusion-360>

**Autodesk Fusion Learning Resources:**

Extend your skills with our free courses, featuring self-paced courses, tutorials, and learning modules.

<https://www.autodesk.com/certification/learn/catalog/product/Fusion%20360>

**Autodesk Professional Development:**

Deepen or onboard to Fusion as an educator by taking our Fusion Fundamentals course (12-hour CAD course and 6-hour CAM course).

<https://www.autodesk.com/campaigns/education/fusion-fundamentals>

If you have questions or would like additional support, please contact [ben.brasch@autodesk.com](mailto:ben.brasch@autodesk.com).



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# 2026 SkillsUSA Info

Competition takes place at **Guilford Technical Community College**

## **Center for Advanced Manufacturing Building (CAM)**

**4/16/26**

**Park Here**



**6012 West Gate City Blvd, Greensboro, NC 27407**

There will be a clothing & resume penalty for the contestant.

Four contests will be offered:

CNC Technician (CNC 3X Mill & CNC 2X Lathe), CNC 3X Milling, CNC 2X Lathe, 5X Milling

**Computers will not be issued; Competitors are expected to bring their own**

MasterCAM & Fusion are available free for students to use, check link

<https://www.skillsusanc.org/>, under CNC tests “2026 Competitor Resource NC” for information, any other CAM software the student is responsible for.

**Orientation (CAM-1200) 7:30am – Submit Resume and sign-in**



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