



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 2025 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 state association website or [contact your state association director directly](#).



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 Milling Programmer, CNC 2-Axis Turning, CNC 3-Axis Milling, and State CNC 5-Axis Milling Programmer competitions test three major skills areas: (1) a CNC knowledge test, (2) CAM programming and Oral Professional Development Assessment and (3) Metrology test

CNC Knowledge Test:

The CNC knowledge test is a set of multiple-choice questions closely related to the competition's CNC subject area of focus, i.e., milling or turning. State directors will determine if this test will be proctored online pre-conference or onsite. 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, part STEP model, and Datasheet. It is the competitor's job to use the provided documents to complete a CAM program. If 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 drawing will be complete with multiple views, making it easy for competitors to visualize the part and understand its geometry. The Datasheet will provide general setup instructions and tool data. Contestants must only use the tool data provided on the Data Sheet. Contestant numbers must be used as the name for the CAM file. If this step is missed, the competitor will be penalized. Remember, save early, save often.

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.

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

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



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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

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.html



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2025 SkillsUSA Info

Competition takes place at Phillips Corp
Haas Automation Distributor
4/10/25



8500 Triad Dr, Colfax, NC 27235

There will be a clothing & resume penalty for the contestant.
Four contests are:

CNC 3-Axis Milling Programmer (was CNC Milling), CNC 2-Axis Turning Programmer (was CNC Turning), CNC Programmer (was CNC Technician), CNC 5-Axis Milling

**Competitors will receive a Data Sheet with a print and a solid model file
Contestant's choice for process plan**

**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 "2025 Competitor Resource NC" for
information, any other CAM software the student is responsible for.**

MasterCAM Licenses for SkillsUSA Competitors during onsite competition day:

Schools that operate on a network license, bringing that with them could cause an issue.

1. Consult your IT person at your school to identify and ensure access and usage of your school licensed software away from school.
2. Barefoot reached out to CNC Software, and they informed us that there is a program in place for this. Users can fill out the form at <https://www.mastercam.com/skillsusa/> . Mastercam will send a temporary license to be used for the event. You can also reach out to education@barefootcnc.com if you run into any issues getting licenses for the competition.

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 email address to gain 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



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.



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