

# CNC Milling, Turning and Technician

## SkillsUSA Indiana

### State Competition – 2021



#### BEFORE YOU BEGIN:

1. **Ensure you have the proper supplies and materials.**
  - ☐ Computer with internet access
  - ☐ Access to CAD and CAM software
2. **Secure a proctor.** The proctor should be a local industry professional, advisory board member, or other volunteer who is not the competitor's teacher. The proctor is required to sign an Integrity Pledge, along with the competitor and their advisor, that will be submitted with the contest files.

Additionally, a proctor is required for online written exams. Two written exams are required for this competition. The written exams may be taken on the contest day, or at any time during the designated testing window. No supplemental or reference materials are permitted for written exams.

☐ **Professional Development Exam:** April 6 at 7AM EST through April 21 at 5PM EST

3. **Set up your workstation.** This contest does not require live video stream or recording. No video recording is required for the online exam.

#### OTHER NOTES:

This contest consists of two components:

1. Theory Exam – **up to 90 minutes**
2. Programming

All students must have an online account with NIMS in order to complete the Theory Test. It is free to register, and accounts must be created in advance of the conference. Contestants will visit [www.nims-skills.org](http://www.nims-skills.org) and select the account type "Candidates." **\*If you already have an account, do not create a new one. Send an email to [skills@nims-skills.org](mailto:skills@nims-skills.org) to have SkillsUSA Competition assigned to your account.**

Proctors/advisor for this test only, must also register for an account. Visit [nims-skills.org](http://nims-skills.org) and select "Proctor." **\*If a proctor already has an account, do not create a new one. Send an email to [skills@nims-skills.org](mailto:skills@nims-skills.org) to have SkillsUSA Competition assigned to the account. The proctor/advisor must schedule a time for their students to take the Theory Exam with NIMS with in the window below.**

Once your account is created, you will be assigned access to the SkillsUSA CNC Theory Exam. This portion of the competition is required by all CNC Contestants. *The Theory Exam may be completed between April 12 at 8AM EST and April 21 at 5PM EST.* There is up to 90-minute time limit for the exam.

A proctor code is required for the exam, which is available once a proctor is registered with NIMS. Be sure to have your proctor create an account a few days in advance of the contest.

On April 21 at 7AM EST, the prompt will be provided in the Championships Hub. Students will complete the project according to the prompt and information provided. Submissions are due by 5PM EST on Thursday, April 22. A local proctor is required for duration of the contest prompt and must observe the students completing all tasks. Once a student accesses the contest files, they have 4 hours to complete the project.

Students in all three contests will be creating a Supplemental HMI Holder (i.e., iPad or tablet holder). Each contest will focus on a specific element(s) of the apparatus. Each set of contestant files will include manual coding instructions, process documents, setup sheets, engineering diagrams, and tool lists. Additionally, students will receive instructions for a CAM programming element.

Codes will be verified using simulation software Vericut.

CNC Technician contestants will complete both the 2-axis and 3-axis components of the competition.

CAM programming is a demonstration component. Students are encouraged to attempt the CAM portion of the competition, as it is being evaluated for inclusion in future competitions. The CAM portion of the contest will not be scored.

CAM Partners Mastercam and Autodesk Fusion 360 both offer free licenses to SkillsUSA CNC participants and have provide preconfigured project template files. For more information click on the following links below

Autodesk Fusion 360:

1. [Single user Installation Process for Windows and MAC](#)
2. [Self-paced CAM learning materials](#)
3. [Post Library for Autodesk Fusion 360](#)
4. [Fusion 360 on Chromebooks FAQ](#)

Mastercam:

1. [Request for a Mastercam license](#)

Submitted files must be in the designated format and named according to the Submission Instructions, <https://drive.google.com/file/d/1xRDQ3uC7zbE548NToeuhv2waZyUGklxw/view?usp=sharing>

#### **CONTEST INSTRUCTIONS:**

**Contest Date: April 21, 2021**

**Contest Project to be available April 21 at 7 am EST**

**Submission due date: April 22, 2021 by 5 pm EST**

**\*\* If you have any questions please contact the state office or already have scheduled your date to compete with your students if the above date doesn't work\*\***

**SUBMISSIONS:** FOLLOW THE SUBMISSION REQUIREMENTS OF EACH PORTION OF THE CONTEST AS DESCRIBED IN THE CONTEST COMPONENTS

- ☐ Resume– PDF file
- ☐ Integrity Statement – PDF
- ☐ NC Code manually entered in text editor
- ☐ Program of all features on Process Diagrams with tools provided from Tool List
- ☐ (Optional) NC Code using CAM software

***\*Review the required submissions for each competition, as outlined in the contest prompt.***

**YOUR CONTEST CODES ARE:**

***Milling: CNCM***

***Technician: PMT***

***Turning: CNCT***

Submit all files to the following link,

Milling: <https://www.dropbox.com/request/TYFZfuDAYLoVHIJ38wkm>

Technician: <https://www.dropbox.com/request/VTh3sFt85ucU2EKPCbTL>

Turning: <https://www.dropbox.com/request/mEJR9cRljQf9jppgnjry>