

**2024 INDIANA SKILLSUSA CHAMPIONSHIPS  
TASK & MATERIAL LIST**

**SKILL OR LEADERSHIP AREA: CNC 2-Axis, CNC 3-Axis, and CNC Programmer**  
**CONTEST LOCATION:**

Indiana State Fairground West Pavilion  
1202 E. 38<sup>th</sup> St.  
Indianapolis, IN 46208

**DATE:** Saturday April 20, 2024

**TIME:** 6:00 am concession opens

7:45 AM

- CNC 3-Axis Milling & CNC Programmer (Formerly Technician) Arrival
  - Students can set up their computers and get their respective programs open and ready. We will have plug-ins for their power supply.

8:00 AM

- Students will receive their packets for the CNC 3-Axis Milling portion of their competition.
  - Packets will be in the form of a USB thumb drive assigned to the student.
    - This will include all necessary files for the competition, students will turn this in with their finished competition file upon completion of programming.

8:15 AM

- CNC 3-Axis Milling & CNC Programmer (Formerly Technician) Competition Start
  - 2-Hrs Allotted for this competition.

9:45 AM

- CNC 2-Axis Turning Arrival
  - Students will be greeted by judges and shown to their waiting area while the milling competition is coming to an end.
    - As seats begin to open up we will show the students to their area where they can setup their computers and get their respective programs open and ready. We will have plug-ins for their power supply.

10:00 AM

- Students will receive their packets for the CNC 2-Axis Turning portion of their competition.
  - Packets will be in the form of a USB thumb drive assigned to the student.
    - This will include all necessary files for the competition, students will turn this in with their finished competition file upon completion of programming.

10:15 AM

- CNC 3-Axis Milling Competition End - All files to be submitted to judges.
  - CNC 3-Axis Milling students will leave the contest area.
- CNC 2-Axis Turning & CNC Programmer (Formerly Technician) Competition Begin
  - 2-Hrs Allotted for this competition.

12:15 PM

- CNC 2-Axis Turning & CNC Programmer (Formerly Technician) Competition End - All files to be submitted to judges.

## **CLOTHING REQUIREMENTS:**

*NO SCHOOL LOGO OR SCHOOL AFFILIATION ANYWHERE ON CLOTHING or IT MUST BE COVERED COMPLETELY*

- Official SkillsUSA khaki work shirt and navy pants is not required but if you have it please wear it or:
- Work shirt or conference t-shirt
- Work pants or jeans (no holes or fraying)
- Black, brown or tan leather work shoes
- Safety glasses with side shields or goggles. (Prescription glasses can be used only if they are equipped with side shields. If not, they must be covered with goggles.)

## **\*AWARDS CEREMONY DRESS CODE\***

*A Dress Code will be enforced during the Awards Ceremony. To accept an award “on-stage”, the student must wear the “Official SkillsUSA Uniform”, State T-Shirt or the competition attire. **NO SHORTS OR HATS!!!***

**EACH COMPETITORS MUST PROVIDE A 1 PAGE RESUME' AT THE BEGINNING OF THE CONTEST, THERE IS A 10 PT. DEDUCTION IF ONE IS NOT TURNED IN AT THIS TIME.**

## **EQUIPMENT and MATERIALS:**

Supplied by the technical committee:

- Pencils and paper
- USB Flash drives
- All Measurement tools

Supplied by the contestant:

- computer with Fusion or Mastercam program loaded on it with a USB Port and wifi hotspot if needed, (Fusion– will need wifi, Mastercam- will not need wifi)
- Nonprogrammable calculator
- Pencil and paper
- Machinery's Handbook (optional)

## **SCOPE OF THE CONTEST:**

The contest will assess the ability to write the CNC program for a part drawing and materials, determine tool offsets, set up the machine and produce a part.

**\*\*\*CONTINUED\*\*\***

# COMPETITOR 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](#).

## About the Competition:

The CNC Milling Programmer, CNC 2-Axis Turning, CNN 3-Axis Milling, and State CNC 5-Axis Milling Programmer competitions test two major skills areas: (1) a CNC theory test and (2) CAM programming and Oral Professional Development Assessment.

### CNC Theory Test:

The CNC theory test is a set of multiple-choice questions closely related to the CNC subject area of focus for the competition, 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, STEP model, and Process Plan. It is the competitor's job to use the provided documents to complete a CAM program. If run, the program would produce a machined part that is in accordance with the Process Plan, collision-free, 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 Process Plan will provide setup instructions, a sequence of operations, and tool data. Contestant numbers must be used as the name for the CAM file. If this step is missed, the competitor will receive 0 points. 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.**

- (Required) Laptop or PC with access to CAM software (Mastercam or Autodesk Fusion)
  - Autodesk Fusion users will require hot spot access to login.
- (Required) Pen or pencil for notes or written calculations
- (Optional) Basic calculator

# Recommended Competitor Preparation

## 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 free myMastercam account to gain access to free Courses in Core, 2D Mill, 3D Mill, Lathe, Multi-axis, and more.

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

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

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



Autodesk is a proud National Partner of SkillsUSA and a member of the Technical Committee for the CNC competitions at the regional, state, and national levels. Autodesk is excited to be a part of the 2024 CNC competition and wish all competitors the best of luck!

### **Autodesk and SkillsUSA:**

Information on how Autodesk can support you in SkillsUSA Manufacturing competitions.

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

*\*If the page doesn't load, please check back soon for updates.*

### **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>

If you have questions or would like additional support, please reach out to [amy.shapiro@autodesk.com](mailto:amy.shapiro@autodesk.com)